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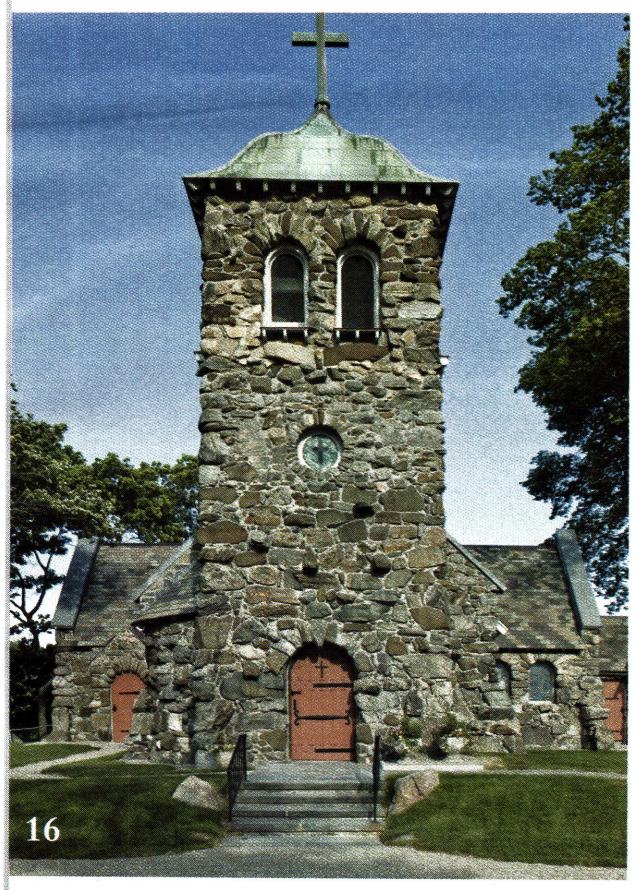
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**On the cover:** Our Lady of the Most Holy Trinity Chapel at Thomas Aquinas College in Santa Paula, CA, was designed by Duncan Stroik to be timeless, rather than "of its time." See story, page 24. *Photo: Stephen Schafer, Schaf Photo Studios*

SOURCELISTS

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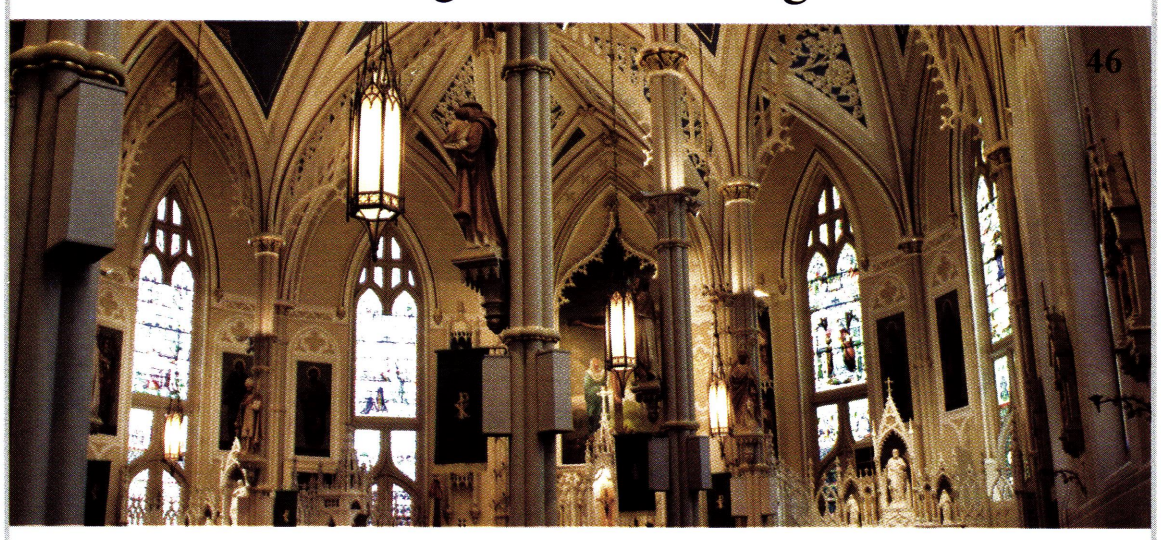


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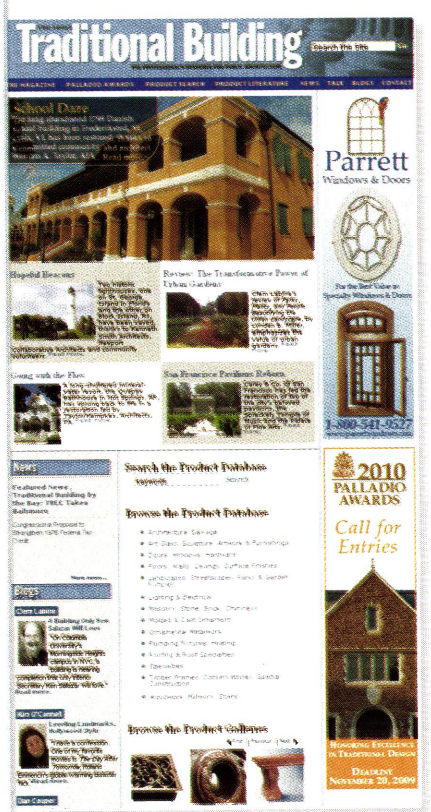


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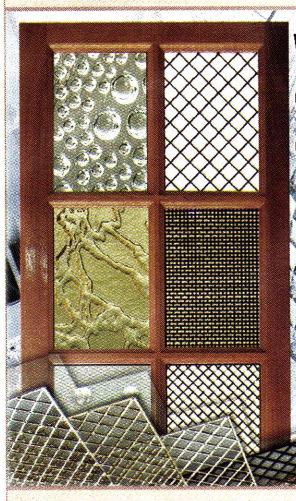
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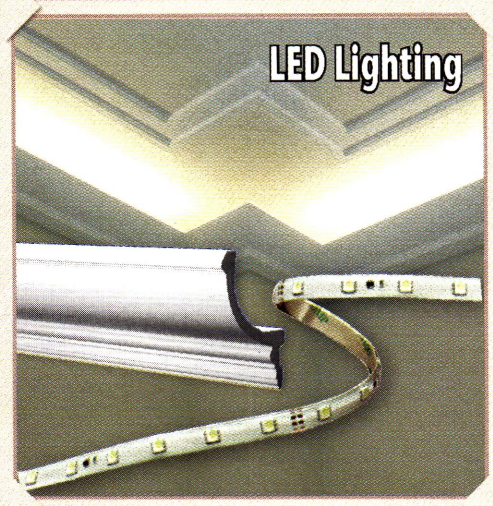
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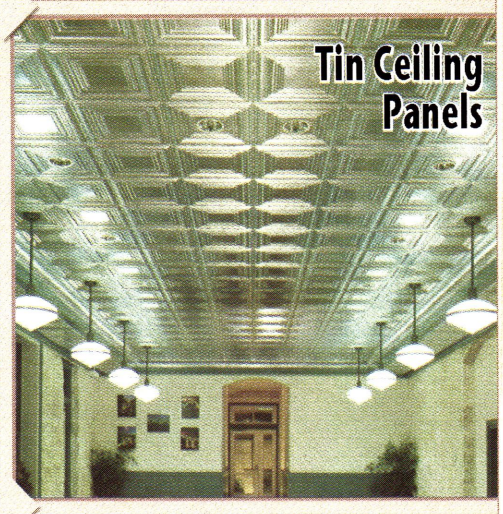
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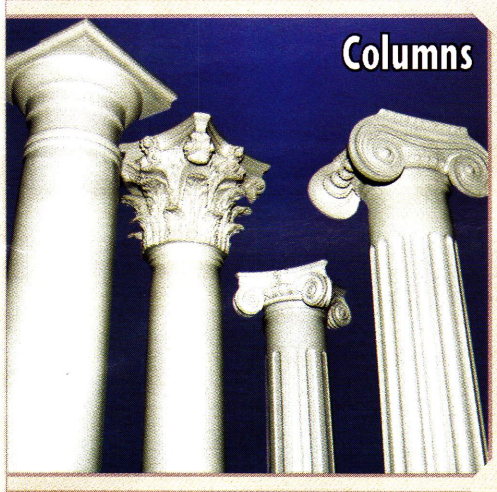
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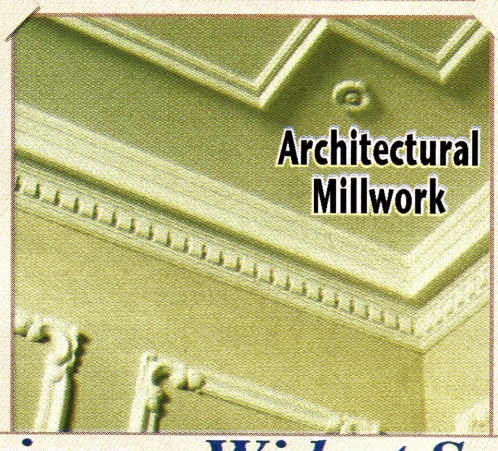
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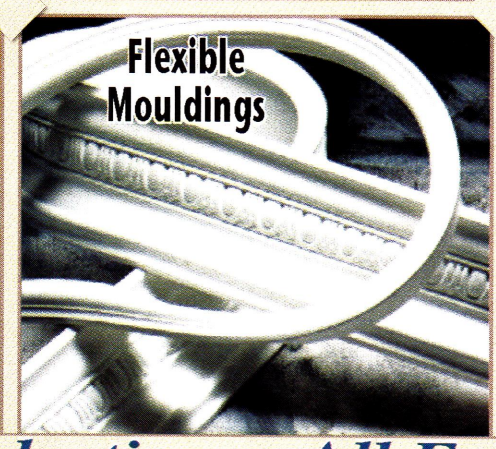
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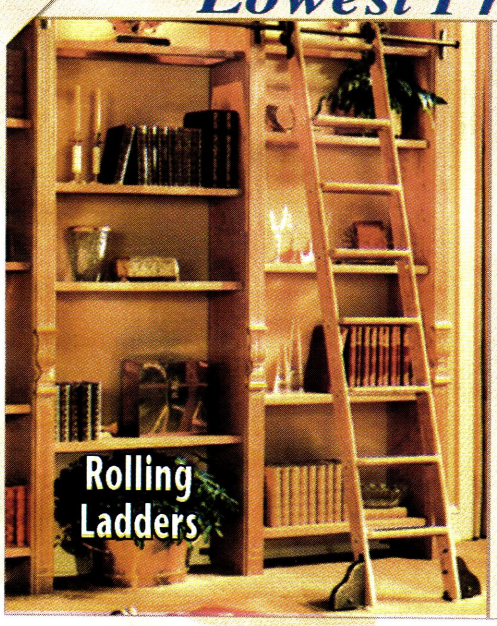
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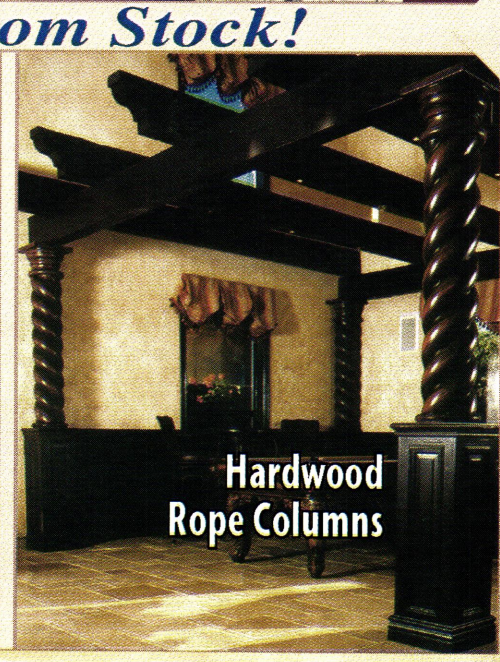
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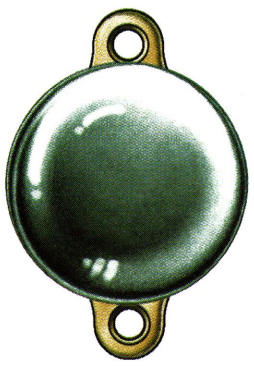
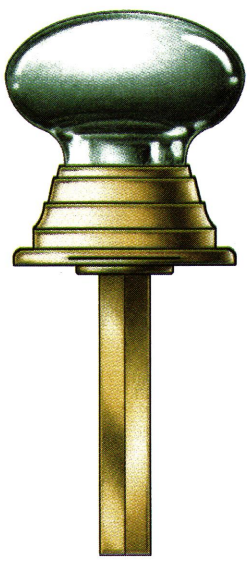
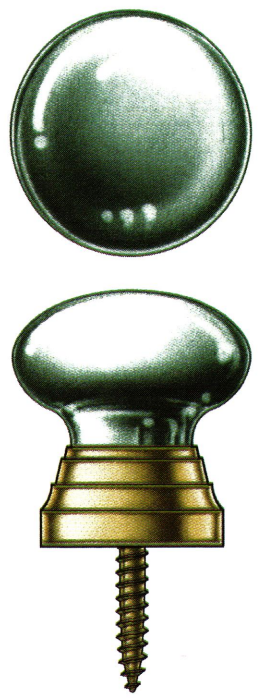


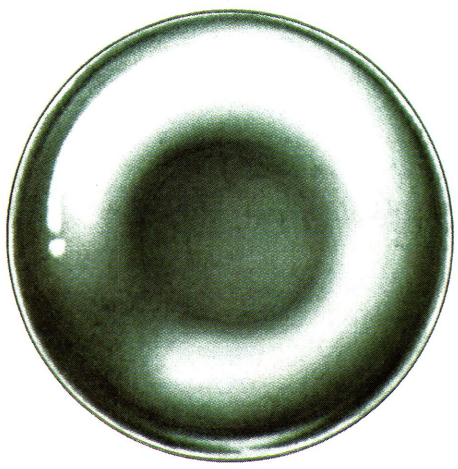


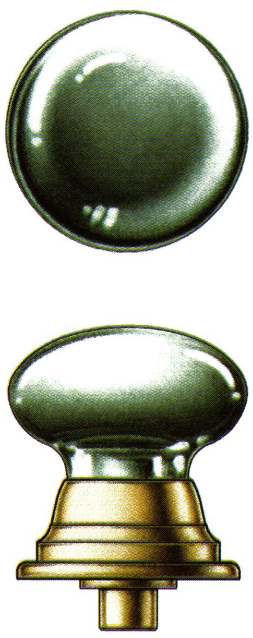
*Crystal Thumbturn and Rose*

*Key Escutcheon*
*with Crystal Cover*

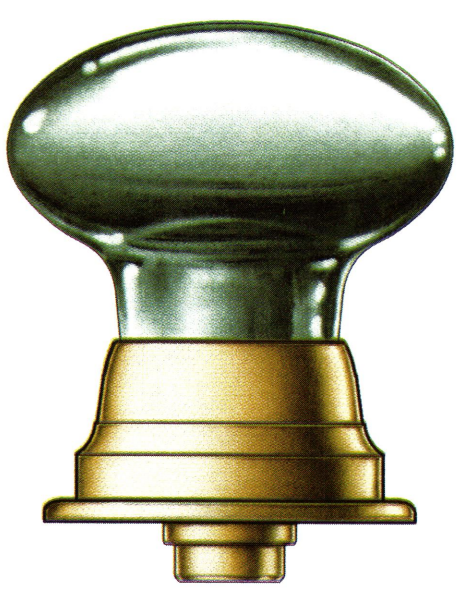


*Crystal Shutter Knob*
*Shown without Rose*





*1¼" Crystal Cabinet Knob*
*Shown with Nashua (Shell) Shank*



*1¾" Crystal Knob*
*Shown with Robinson (Stepped) Shank*

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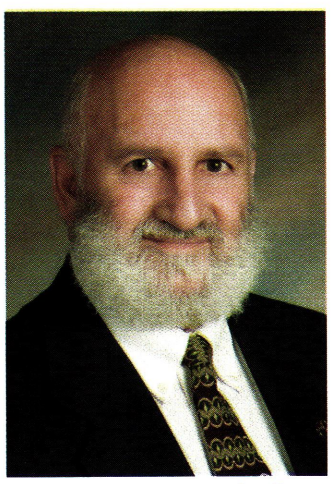
# Michigan Master Builders

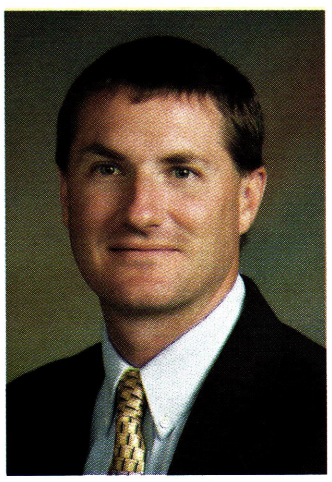
With over a century of experience in construction, The Christman Company continues to find new building types and fields to add to its corporate resume. **By Gordon Bock**

Building a business may be a figurative expression, but building a building business – especially one with the history and range of The Christman Company – is also as much about recognizing the changing uses of buildings and materials as it is growing a balance sheet. As a contractor, management and development company, whose project areas range from historic preservation to higher education to religious buildings, the firm has over a century of experience in seeing a new field and then becoming experts in it.

**Ronald D. Staley, FAPT, senior vice president and director of national preservation, says that historic building projects are "all about the details."**



**"Sustainable construction," according to Gavin L. Gardi, LEED AP, CFD, AVS, sustainable programs manager, "is becoming the new normal."**



**Jeffrey R. Arlington, vice president, regional director of historic preservation, notes that colleges and universities are "proudest of their historic buildings."**

**Top: In keeping with their goals of sustainable living and mandate as a teaching order, the Sisters, Servants of the Immaculate Heart of Mary embarked on a plan to both restore the windows and other building fabric of their 1930s Motherhouse facility, as well as renovate it with the latest in 'green building' practices and systems, such as an extensive geothermal heating/cooling field.**
Photo: Gene Meadows

The modern Christman dates back to 1894 when H.G. Christman formed a legal partnership with his brothers to grow an existing construction business in South Bend, IN, and the surrounding environs. Through the following decades the company prospered by catching the waves of the growing auto industry and the use of poured concrete construction – a skill that continues today.

## Prescient Historic Preservation

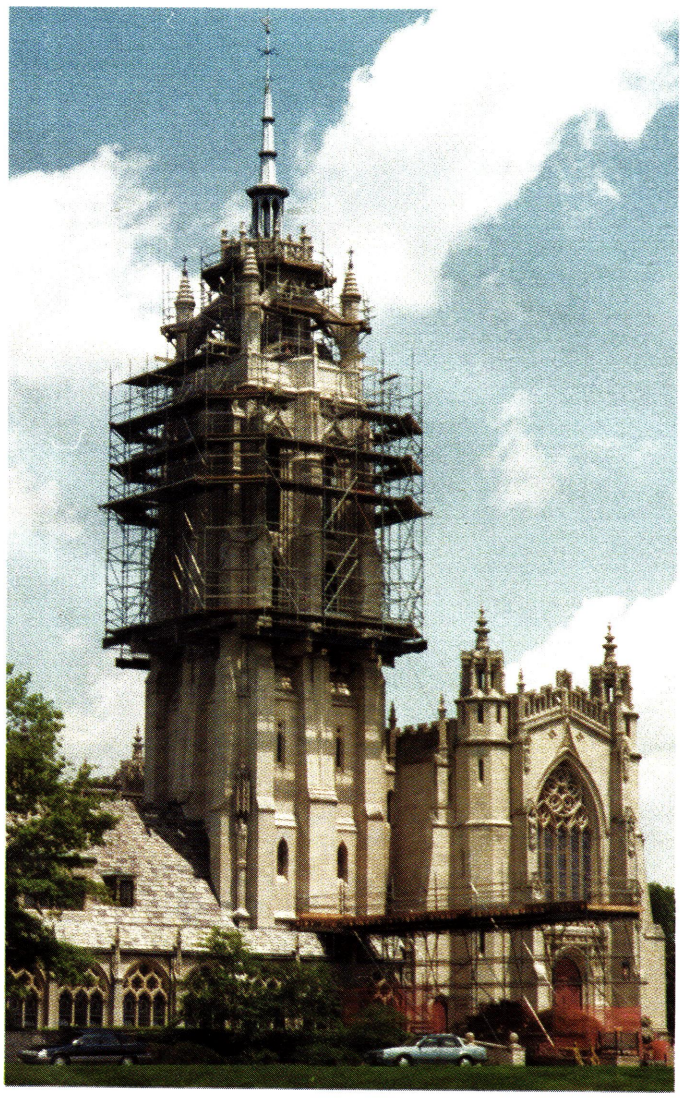
A good example of being in the right place at the right time occurred in 1986, when Christman became involved with the restoration of the Michigan State Capitol in Lansing, not far from its corporate headquarters. Since the comprehensive scope of the $58-million project involved restoring and reversing a century's worth of alterations to the huge building – from correcting missing structural supports to rebuilding skylights and decorative roof features – the project manager at the time, Ronald D. Staley, FAPT, now senior vice president and director of national preservation, decided to do his homework and visit numerous other state capitols.

Staley remembers, "Part of what I did was to ask my peers, 'How did you get a state capitol project, and what are you doing after it is done?'" The results were intriguing, and started to take on a life of their own. "What really hit me," says Staley, "was when a colleague in New York asked, 'How can someone do a project as monumental as the State Capitol and then just leave the experience behind?'"

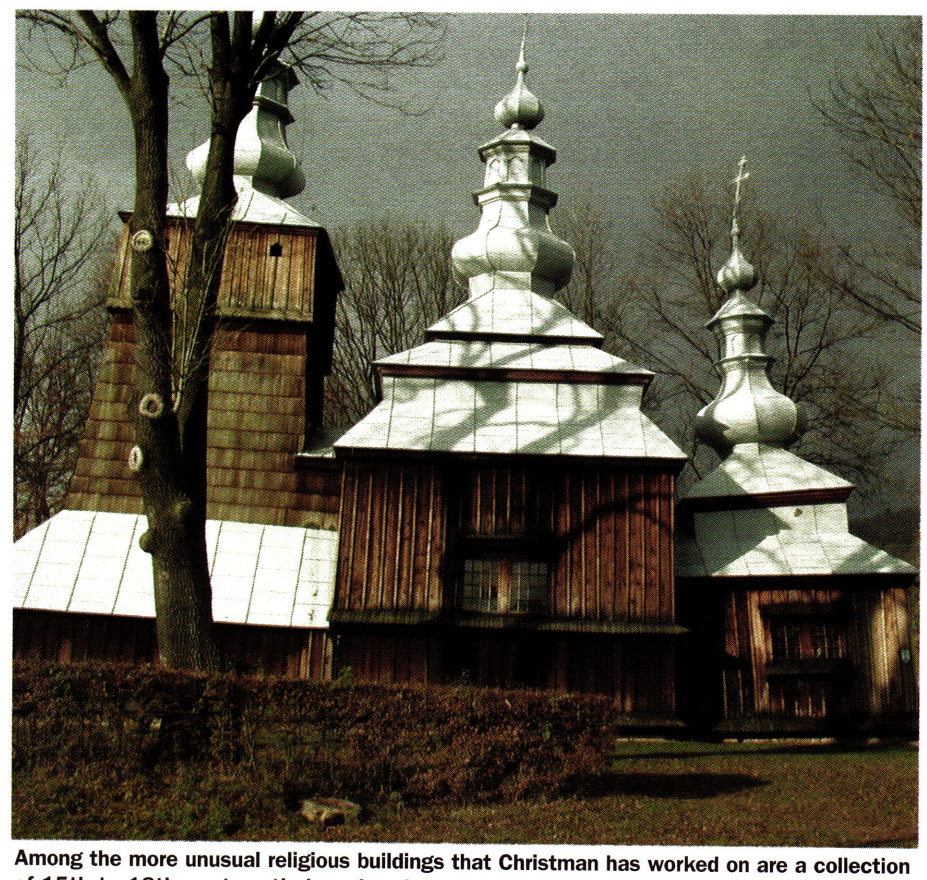
**Along with upgrading mechanical systems to state-of-the-art technologies, Christman also uncovered some of the few original decorative finishes inside the Motherhouse, such as this lobby tile from the legendary Michigan art pottery Pewabic.** Photo: Gene Meadows

It was a good question – so much so that, once back in Lansing, Staley saw an opportunity in the answer. As he remembers, "I met with the president of Christman at the time, Phillip V. Frederickson, P.E., and said, 'I have 13 of our best people working on the Michigan State Capitol project right now; they're going to be there for four years; I can't see them throwing this experience away." Moreover, Staley couldn't ignore how each of the four architects on the project had a practice specifically devoted to historic preservation – they were known as preservation architects – but there was nothing of a similar nature in the contracting industry. Put together, all the observations pointed in the same direction. "We did a study to see if there was a sufficient market in the Michigan region, which there was, and then a put a business plan together, and I've been carrying that torch ever since."

Judging by the project list that torch has been burning ever brighter, especially since the late 1990s. In 2001, the Historic Preservation Group at Christman found itself involved with two projects beyond their home turf – the administration building at the University of Notre Dame in Indiana and the Old Governor's Mansion at Georgia College and State University – and another horizon came into view. Says Staley, "We looked at the out-of-state projects we were doing and thought, if we really want to expand the group, then we should focus on a couple of areas where there are more old buildings."



**When a leaking roof atop a 77-bell carillon was causing stone masonry to literally pop off, Christman began repairs by erecting a scaffold that started half-way up the 170-ft.-tall bell tower so as not to interrupt services at Kirk in the Hills Presbyterian Church.** All photos: courtesy of The Christman Company unless otherwise specified



**Among the more unusual religious buildings that Christman has worked on are a collection of 15th to 18th century timber churches in Eastern Slovakia and Southern Poland. Leading an international team, the Historic Preservation Group helped develop master conservation plans for the highly decorative all-wood buildings, which are a World Heritage Site.**

**Taking after the Washington, DC, model, the 271-ft. high Michigan State Capitol in Lansing was large enough to house the entire state government when completed in 1879. By the 1980s, however, generations of mechanical services and repeated alterations – such as adding half floors in the original 22 ft. high spaces – had left the building ready for a comprehensive historic restoration and renovation by Christman.** Photo: Vertical Access

This canny conclusion led to opening two new offices – one in Augusta, GA, headed by Jeffrey R. Arlington, vice president, regional director of historic preservation, and another in Washington, DC/Virgina, headed by Staley himself. Says Arlington, "What I love about historic preservation projects is that they're always, different, always interesting."

## Sustainability Begins at Home

As luck would have it, the new century also brought a new focus to the group in a remarkable project that turned on "green" building as well as historic preservation and church-based structures. In the 1990s, the Sisters, Servants of the Immaculate Heart of Mary, a religious congregation of women known for their pioneering work in education, began the restoration and renovation of their Motherhouse in Monroe, MI. (See *Traditional Building*, December 205, page 34.) When built in the 1930s, the 280,000-sq.ft. Motherhouse was the residence hall of the convent – particularly for novice nuns – embracing some 220 rooms as well as a service wing and other functions.

By the 1990s, however, the needs of the order and its shrinking congregation were changing, so the sisters stepped up to address those needs in the building. Says Staley, "As their congregation aged, they really hadn't done a lot to the facility, but after 70 years, they decided that what they needed was to convert it to a retirement home, with a full progression from independent living, to full nursing and full medical care for the members." Forward-thinking enough perhaps for any organization, but as teachers the Sisters had yet another mission for the building. "They're very in tune with sustainability – they've always been self-sufficient, farmed their own land, and so on – so they wanted to maintain that idea of sustainability in the new role of the building," Staley notes.

As part of this vision, the Sisters took specific sustainable-building measures to ensure that Motherhouse would be viable in the future. "They were very big-picture oriented," says Staley. "They really looked at the work from the standpoint of how lightly they can touch the earth, including a very detailed analysis of restoring windows, versus replacing them, and recycling materials." The work included not only the enlightened reuse of existing materials and features, but also the latest in "green" technology, such as a huge geothermal field for heating and cooling, solar energy panels, and a gray water system.

The combination of old and new is not as unlikely as it sounds. Says Gavin L. Gardi, LEED AP, CFD, AVS, sustainable programs manager, "Historic buildings often provide a really good opportunity to address water issues because typically, the plumbing fixtures are going to be very old and the door is open to upgrade them to modern standards"

The Sisters were equally thorough in analyzing the green materials systems in terms of payback – not only recouping the dollar premium they may cost, but also regarding the intangible returns. "By most people's standards," says Staley, "the new gray water system at Motherhouse would not have a good dollar payback, because water is so cheap here in Michigan, but it has an educational value for the Sisters."

Indeed, the Sisters can demonstrate to visitors that they save thousands of gallons every year by just running their sink and shower water through a natural bioswell and then using it for toilets. This becomes valuable education for the inevitable day when water will be more precious. Says Staley, "People talk about sustainability, but a lot of folks don't really know what they're saying. The 'business' has to be sustainable or the building won't exist. The Motherhouse has been designed to be sustainable because it's got flexibility. Walls may get tweaked down the road, but anybody can use a geothermal field or gray water system."

Another example of clients practicing what they preach is the recent renovation and restoration of Christman's own national headquarters in Lansing. The 1928 structure, which began life as the headquarters of the Michigan Millers Mutual Fire Insurance Company, (see *Traditional Building*, April 2009, page 34) was in need of major repairs by the time Christman took it over and well behind the communications curve in terms of building systems.

Rededicated in 2008, the building now combines a sensitive rehabilitation and preservation of the building's historic fabric with state-of-the-art "smart" systems for heating and cooling, earning it the first double LEED platinum rating: LEED CI for the commercial interiors and LEED CS for the core and shell. "One of the goals of our group is to show the client how to achieve a LEED rating for a building in the most economical way possible, and historic buildings typically offer many options," Staley notes. He explains further that, for any project, there may be more than one path to a desired LEED level, and part of their job is to explain to the client the incremental costs for each path – if indeed there are any costs. He adds, "The interesting thing about our office is that we don't have solar collectors or wind turbines, and yet we have a LEED platinum rating."

It's all part of Christman's efforts to be a green company across the board. "We've put into place all kinds of programs," says Gardi. "We recycle building materials or divert them from the waste stream on all our projects, not just sustainable projects." In addition, the company reviews indoor air quality during construction programs at all projects, LEED or not. Christman also strives to buy sustainable building products and office supplies with recycled content – even food that's locally grown where possible. Adds Gardi, "Our company has fully embraced the whole sustainable approach in part because it makes the best business sense. You can operate and build buildings more cost-effectively if you build them in a sustainable manner."

## An Inspiring Project

A textbook example of a religious building problem, as well as the kind of mechanical challenge that excites the Historic Preservation Group, was the repair of the bell tower at the Kirk in the Hills Presbyterian Church in Bloomfield Hills, MI. Though built in 1950s, the church is a postcard-perfect Gothic structure down to the heavy masonry buttresses supporting the 170-ft. tower with its 77-bell carillon. Unfortunately, misguided repairs of the belfry roof had multiplied over the years until water intrusion began to threaten not only the masonry structure but the parishioners below.

"The real problem was that no one had ever looked holistically at this tower to see what was going on," Staley says. Indeed, after water was observed trying to exit the masonry joints, the church hired a contractor who re-pointed the joints with a waterproofing product that only exacerbated the problem. With no way to escape, the water continued to come though the walls and even blow the masonry apart.

"It got so bad that about 70 rock faces started to pop off, and the wide buttresses were literally falling away from the tower," says Staley. To complicate matters, scaffolding could not rest on the ground because there had to be constant access to the adjacent sanctuary, which was in use all week for weddings and services. Before any actual repairs could proceed, Christman's solution was to erect a structural framework through the tower and around the carillon to support 40 tons of scaffolding. Then the Historic Preservation Group worked with a series of subcontractors to install a new lead-coated copper roof, reattach or replace some 300 loose stones, repair the back-up masonry, and improve the roof drainage system – all over a period of nine months.

"The tower was a great team project, where we brought together a variety of groups – from the mason, roofer and other trades to the structural engineers, architects and clients," Staley notes. "We like the complex projects, the ones that give us a real structural challenge." Judging by the continuing growth of the Historic Preservation Group, that's a good way to run a business. **TB**

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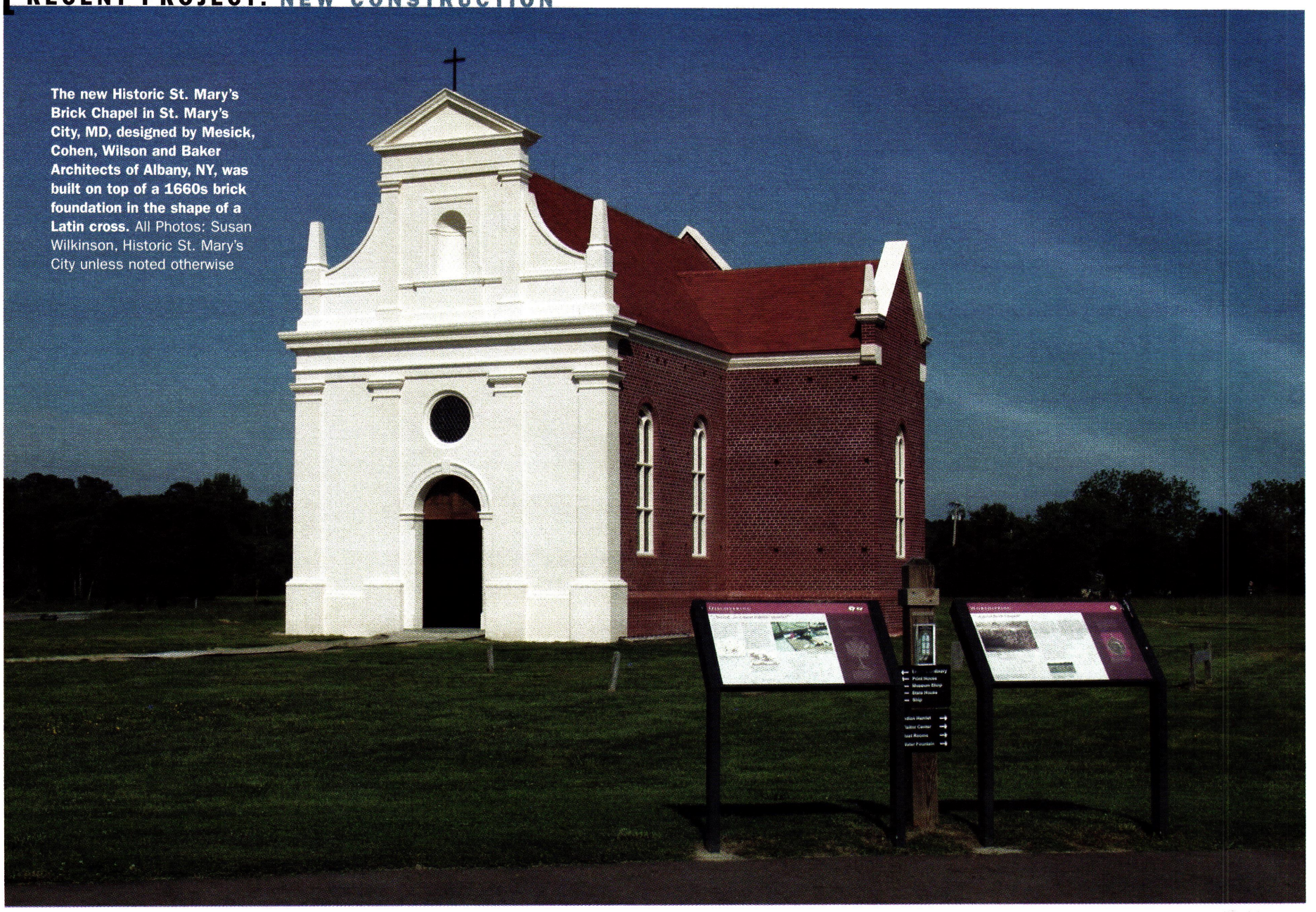
*Gordon Bock is a writer, consultant and longtime editor of* Old-House Journal *who comments on historic buildings at www.bocktalk.com.*

**Web Extra: Additional photos can be seen at www.traditional-building.com/extras/Dec09profile.htm.**

**Top right: Part of the restoration of the immense dome at the Michigan State Capitol involved returning the exterior from white to the original, light tan stone color. Inside the rotunda, work included restoring many decorative details as well as adding ADA access.**

**Right: Christman's restoration and renovation of its 1928 Lansing headquarters earned two LEED Platinums: one for the core and shell and another for the historic office interiors.** Photo: Gene Meadows



**The new Historic St. Mary's Brick Chapel in St. Mary's City, MD, designed by Mesick, Cohen, Wilson and Baker Architects of Albany, NY, was built on top of a 1660s brick foundation in the shape of a Latin cross.** All Photos: Susan Wilkinson, Historic St. Mary's City unless noted otherwise

# Building with Past Techniques

**PROJECT**

Historic St. Mary's City's Brick Chapel, St. Mary's City, MD

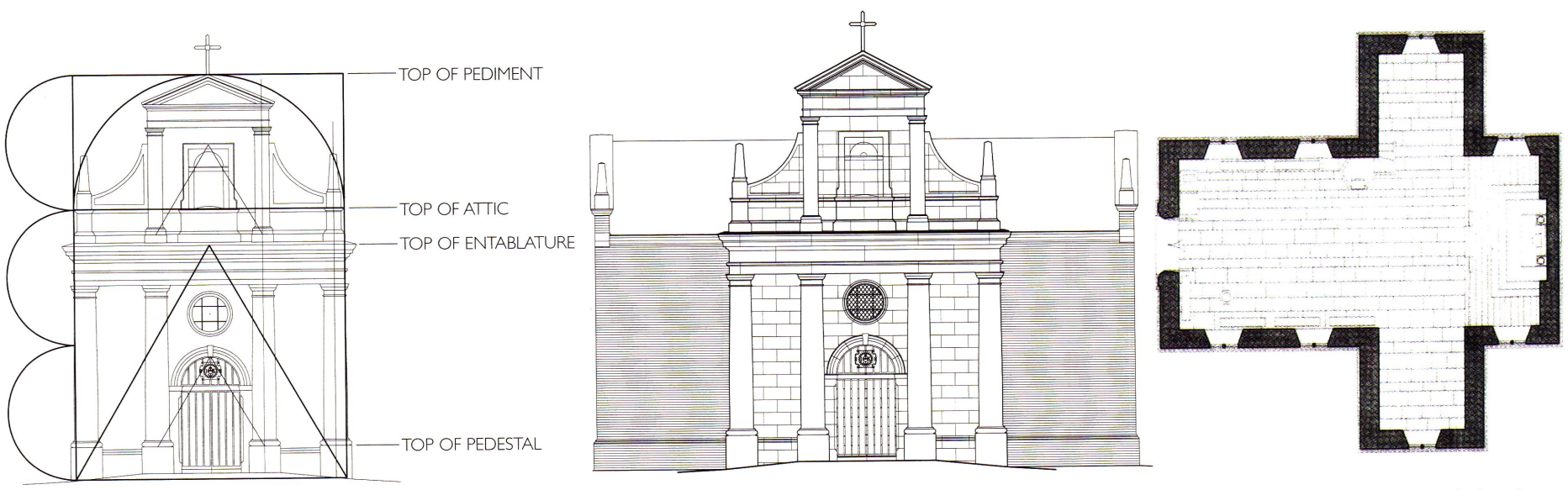
**Architect**

Mesick, Cohen, Wilson and Baker Architects, Albany, NY; John Mesick, principal

IN 1634, ENGLISH COLONISTS settled near the junction of the Potomac River and Chesapeake Bay, designating the location Maryland's first capital and naming the town St. Mary's City. The colony was led by the Catholic Calvert family while settlers that came with them were predominately Protestants. During this time of religious conflict, the Calvert's maintained a tenuous hold on power. Nonetheless, the capital saw great developments with a strong tobacco-based economy and population growth in the latter half of the century. New public buildings were constructed including a Jesuit chapel (circa 1667), which was Maryland's first brick building. By the end of the 1600s, a group of Protestants led a revolution that resulted in the relocation of the capital to Annapolis as well as the closing of all Catholic churches and schools. The chapel was dismantled by the Jesuits and its materials were taken to build their new manor several miles away.

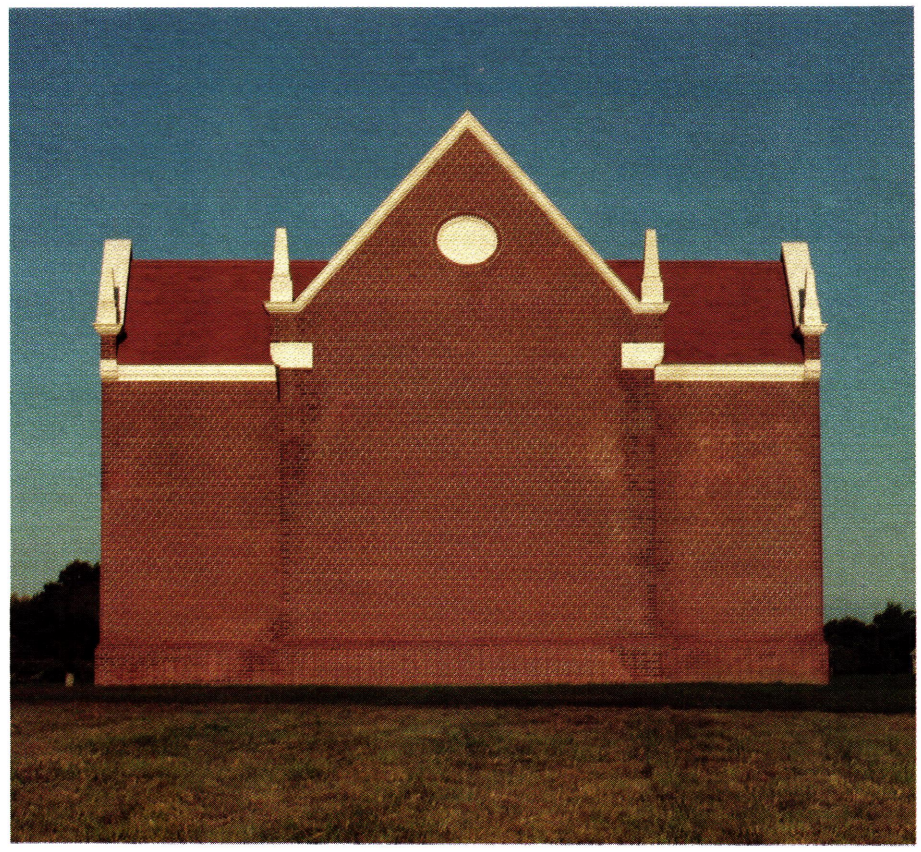
The land had been largely undisturbed, protected under fields of tobacco, corn and wheat, making it the ideal location for archaeological excavations and historical research. In 1938, following a local belief that a Jesuit chapel once stood on a farm field, architectural historian H. Chandlee Forman tested the site and discovered a brick foundation in the shape of a Latin cross. The foundation walls were 3-ft. thick and extended to a depth of 5-ft. below grade level. The land, however, remained in private ownership until a museum, Historic St. Mary's City (HSMC) acquired it in the 1980s.

Excavations began again with the goal of retrieving information so that the chapel could be accurately rebuilt. Unfortunately, there were no surviving documents that described the chapel. Archeologists found wood lathe without traces of plaster, which suggested that there was once a timber-clad ceiling. Fragments of diamond-shaped clear glass and pieces of lead were believed to have been used in windows. Surviving flat roof tiles indicated a roof slope that historically, was termed "true-pitch" – about 47 degrees.




**Through meticulous research, the architects found that historically, the main facades were much more dramatic when compared to other parts of the structure. Therefore, the main façade was veneered in stone-like lime stucco with Tuscan columns while the rest of the exterior and interior are relatively modest designs.** Rendering and drawing: courtesy of Mesick, Cohen, Wilson and Baker Architects

**Excavation efforts were revived in the 1980s when HSMC set the goal to accurately rebuild the chapel. Building materials were recovered that included glass shards from windows, roof tiles and stone flooring.** Photo: Henry Miller, Historic St. Mary's City



**Hand-formed bricks and lime mortar, made with historically accurate methods, were used to build the 25-ft. high brick walls of the Brick Chapel.**

In 1996, HSMC approached Mesick, Cohen, Wilson and Baker Architects (MCWB) of Albany, NY, to discuss design plans for the chapel using the limited information found on the site. "I can remember at the interview the clients wanted to reconstruct the chapel, but they didn't have much money," says John Mesick, principal at MCWB. "So they thought to build it out of concrete blocks and veneer it with bricks. I was bold enough to say that nothing is known about the design of this building other than the footprint and the materials from archeology; no matter what we do we'll probably get the design wrong. There's no way of accurately evoking and reviving the design, but if we use this as an exercise in retrieval of historic building processes and techniques perhaps we'll be forgiven by our future generations. I guess, based on that argument, they hired us!"

Mesick and his design team started their architectural research by learning what the founders of the chapel were familiar with. "The chapel had been originally built by four Jesuit priests and they were all Englishmen, but since they were Catholic, they couldn't be educated in England," says Mesick. "The priests went to Flanders where there was a seminary to educate English Catholics – two of them had gone to Rome and the others had become missionaries in Ghent. We went to Flanders and Ghent to see what they would've known in the early 17th century.

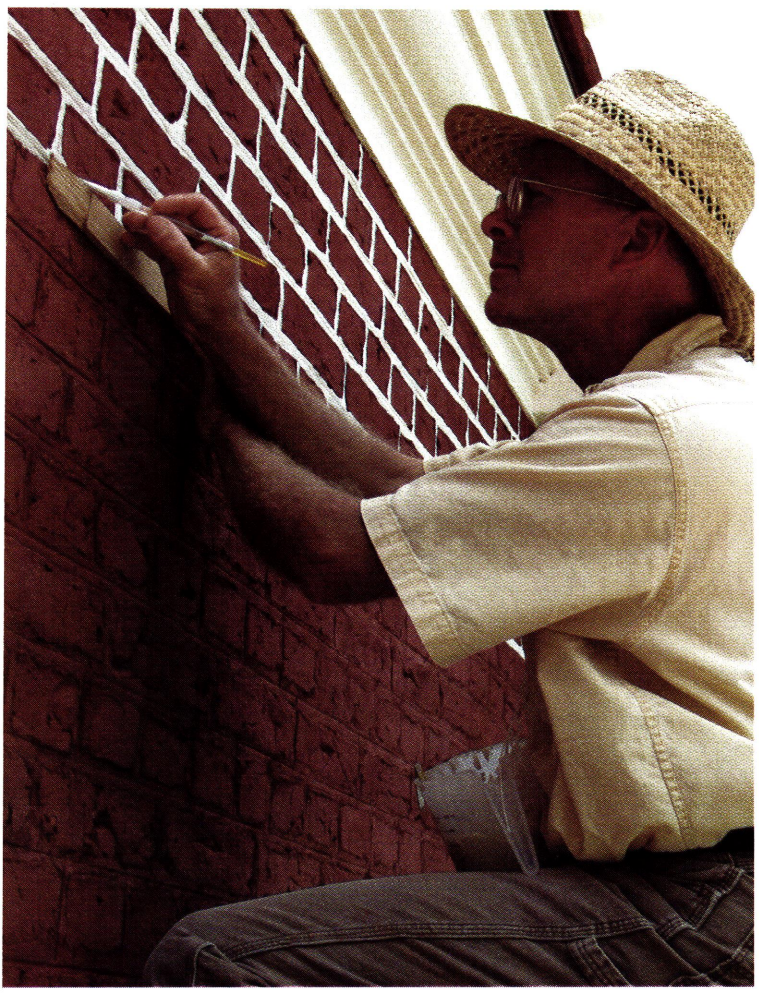
"We started collecting pictures of Jesuit buildings from South America, the Philippines and Southeast Asia, and you always see the same formula being used on the façades. I've been practicing for 40 years and I've never realized that historically the façade is how the building spoke to the world. Many historic buildings were seen on all four sides but the façades were always dressed up. That notion became very strong when we designed the chapel because the rest of the building was really straightforward."

Indeed, with the exception of the western façade, all the elevations are relatively simple – brick walls with 12-ft. high windows and parapet gables. The main façade is differentiated by bricks veneered with lime stucco and scored to look like stone. Small obelisks were added to the corners of each elevation in the same manner as described in the surviving specifications for the construction of the nearby brick statehouse built in the 1670s. Columns of the Tuscan order were superimposed to accommodate the 25-ft. high walls. "Palladio mentions in his book that foundations should be one-fifth the height of the wall," says Mesick. "The chapel foundations are 5-ft. deep in an area where they only need to be 12-18-in. deep. The soil was very good so we speculated that the walls were probably very high. We came up with the height of around 25 feet for the walls."

Mesick also proposed reconstructing the chapel using historically accurate building materials. More than 25,000 hand-formed bricks, utilizing clay taken directly from the site, were molded and fired in a wood-burning kiln by masonry craftsman Henry Cersley near Charlottesville, VA. More than 6,000 of these were shaped by hand to provide decorative moldings using the same cut and rub process that had been employed originally.

Jimmy Price, principal at Madison Heights, VA-based Virginia Lime Works, prepared the lime mortar by firing crushed oyster shells and allowing the mortar to slack for 12 months before use. The mortar couldn't achieve set in cold weather so it took several seasons to erect the walls. At the outset of construction, Price decided to build an historically accurate wood-pole scaffolding that met current OSHA standards. Two wooden hand-crank lifts, as opposed to electrical lifts, were used to lift bricks and mortar. "While we were trying to use 17th-century building technology, Price was going one step further and replicated the mode of construction of that century," says Mesick.

**Obelisks were incorporated in all the corners of the Brick Chapel; the design was inspired by surviving specifications of a nearby 1670s brick statehouse.**



**The historic method of using a mixture of alum and iron oxide to color-wash the walls was used to cover lime mortar stains and for protection on the brick walls. Mortar joints were penciled in afterwards for a cleaner and more refined appearance.**

**Through research it was realized that stone pavers were laid directly on the ground without mortar for indoor burials and pews were omitted in the nave, as the congregation would have been standing for the services.** Photo: Troy E. Gruber Jr.

**Artisan Glass Works of Baltimore, MD, replicated fragments of diamond-shaped glass found during archaeological excavations for all the windows.**

Once the brick walls were finished, they were color-washed with alum and iron oxide, and the joints were penciled in afterwards – a method commonly used on buildings up until the 1800s. "We learned of the historic technique of color-washing to improve the appearance of brick structures while doing research on this building," says Mesick. "We think the walls were color-washed to clean up the mess made by lime spattered on the walls, which is very hard to get off the wall once it cures. I think the wash will last about 20 years and then it will have to be redone. That's why we don't find it surviving in-situ on buildings very often. However, tell-tale signs of the red wash can sometimes be found on mortar joints underneath the white penciling."

Working with David Fischetti from Cary, NC, a structural engineer renowned for his work with historic timber structures, the architects devised a roof framing system often found in 16th- and 17th-century buildings. This consisted of a mix of common rafters and principal trusses with raised collar ties that allowed the arched ceiling to extend upward into the roof space. Tom Rouse, chief designer at Blue Ridge Timber Frame of Swannanoa, NC, prepared CAD shop drawings to detail and precisely measure over 600 pieces of pine for the roof system and barrel-vaulted timber ceiling. Since the barrel-vault design didn't allow for parallel cords, the individual wood pieces in each of the seven main trusses had to interlock and support the weight of the roof as well as create the curve of the ceiling. The roof was finished in a clay tile imported from Keymer Tiles of West Sussex, England, that replicated the dimensions of the originals found on the site.

Archeologists found a piece of stone slab during their research that was probably imported from the Rhine Valley – it indicated the thickness and type of stone used for flooring. Sandstone from Brier Hill Stone Co. of Glenmont, OH, was selected for its likeness and was laid directly on the ground. "During this time, churches with stone floors and indoor burials had stones laid directly on the ground without mortar because the slabs were often lifted for digging new graves," says Mesick. "This taking up and putting down of floors was quite common all over Europe when burying people in churches."

The 1,300-sq. ft. interior is modest in design. Except for sleeves incorporated in the foundation for future upgrades, the structure doesn't include electrical lighting or other modern amenities. There are also no pews in the nave as the original congregation would have stood.

For the architect and craftsperson, the Brick Chapel in St. Mary's City was a unique learning experience that required them to re-evaluate their former relationship. "Our drawings, by their very nature, were almost minimal," says Mesick. "We did count every brick course and tell them what the shape would be at each of the decorative details. That was something a 17th-century master mason would have known. However, during construction the process became much more about the craftsmen doing his own work rather than the architect directing it, which is wonderful and was how buildings were built in the past. By being more in touch with the problems that confronted the builders of the 17th century, we gained a better understanding of both architectural design and building technology from those times." – *Annabel Hsin*

**Web Extra: Additional photos can be seen at www.traditional-building.com/extras/Dec09StMarys.htm.**

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# Rock Solid

BUILT IN 1886-87 using large local sea-washed stones, St. Ann's Episcopal Church in Kennebunkport, ME, was beginning to show its age as the new century emerged. Originally designed by Henry Paston Clark of Boston, the church sits on the Maine coast where it is constantly buffeted by sea winds and harsh winters.

The project involved not only repointing the exterior stonework, but also structural work on the 60-ft. bell tower and restoration of the interior. Most of the work was done by Consigli Construction Co. in collaboration with Theriault/Landmann Associates.

**PROJECT**

St. Ann's Episcopal Church, Kennebunkport, ME

**Architect**

Theriault/Landmann Associates, Portland, ME

"The building is unique. It's a real gem," says Scott Whitaker, project manager with Theriault/Landmann Associates. (He now has his own firm, Building Envelope Consultants, with offices in S. Portland, ME, and Portsmouth, NH.) "It's called rustic Romanesque and it's my understanding that it is the only one of this style on the Eastern seaboard. The body of the church is made of stones that were harvested right there."

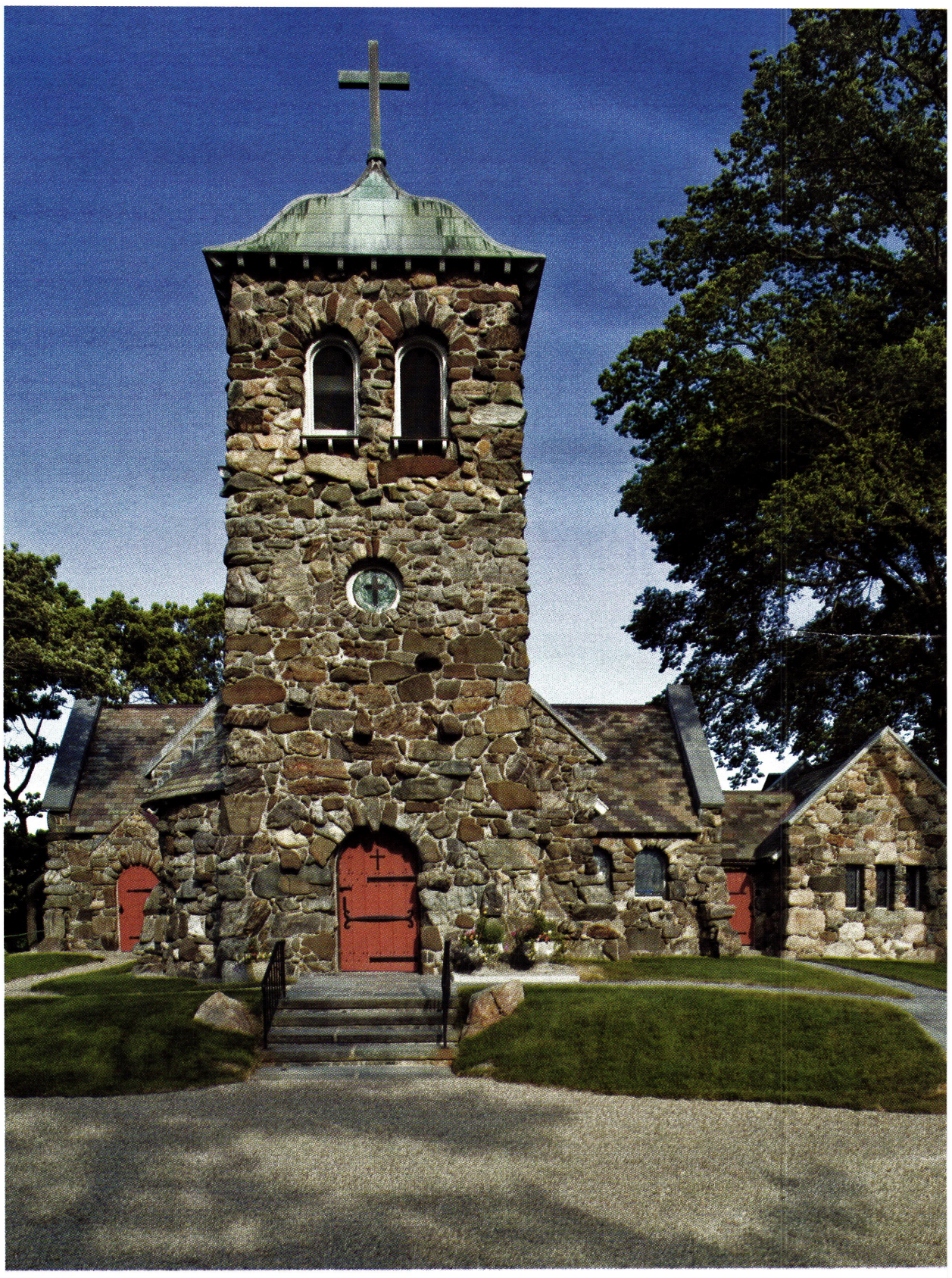
The building is notable for its 2½- to 3-ft.-thick walls made of local rubble stone. All sides of the church are exposed and are subjected to the elements of the ocean and the harsh New England weather.

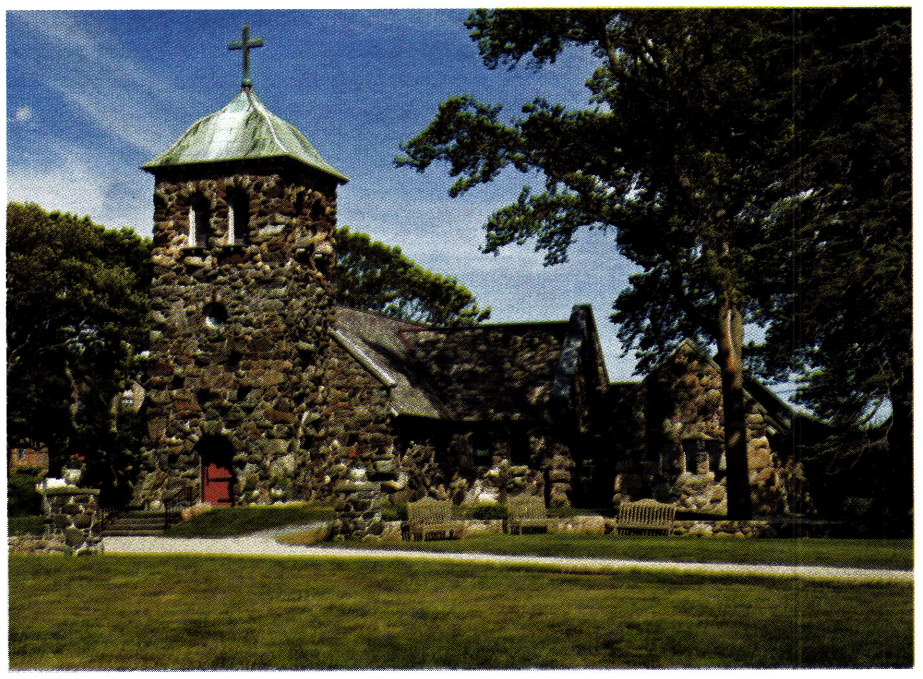
Matthew Tonello, LEED AP, Consigli project executive, explains that the restoration was completed in two phases. The first phase involved the restoration of the tower, the bell frames, the bells, roof structure and the mechanism that rings the bells. "This was largely a repointing campaign," he says. "Our focus was on pulling out mortar 3-4 in. in depth and repointing the building. We had to remove some of the smaller stones and catalog them so they could be returned to the correct locations."

The team used hydraulic lime mortar, mixed with one part Federal white type one Portland cement. The Portland cement was added to accelerate the hardening time. "Hydraulic lime has an extended hardening time," says Tonello. "It could be a month before you get a good strength. The cement accelerated the curing of the mortar to less than 12 hours. The mortar was a 1.2.8 mix, one part cement, two parts hydraulic lime (St. Astier 3.5 Natural Hydraulic Lime) and eight parts local sand."

There was also concern about the stability of the bell tower. Dedicated in memory of President George H.W. Bush's mother, Dorothy Walker Bush, it was becoming unstable because half of the base rested on a ledge and half rested directly on the soil and was sinking. Consigli workers dug trenches and underpinned the structure, forming a continuous foundation. In addition, a hidden underground drainage system was installed to take moisture away from the building's walls and foundation.

Consigli had 8 to 12 trades people working on the project. In the first phase, they scaffolded the building, then removed the roof and extracted the bells so they could be sent to Balzer Family Clockworks, Freeport, ME, for restoration. Then the underpinning of the tower was completed in areas where scaffolding was engineered to span the locations where underpinning pits were excavated by hand. The building was then repointed. The masonry restoration took about two months, Tonello notes.





**Top right: Built in 1886-87, St. Ann's Episcopal Church in Kennebunkport, ME, has 2½- to 3-ft.-thick stone walls made of local sea-washed rocks. The structure was recently restored by Theriault/Landmann Associates and Consigli Construction Co.** All photos: Sandy Agrafiotis

**Right: The 60-ft.-tall bell tower had become unstable because half of it was on a ledge and half rested directly on the soil. Workers dug trenches and underpinned the structure to create a continuous foundation. In addition, a hidden underground drainage system was installed to take moisture away from the building.**

**The more than 100-year-old stones in the church's thick walls were repointed using a mixture of Portland Cement and St. Astier Natural Hydraulic Lime. When stones had to be removed, they were cataloged so they could be returned to the correct locations.**

Other exterior work included reconstruction of frames and sills in the belfry in the bell tower. The stained glass windows were sent to Phoenix Studio of Portland, ME, for restoration.

Inside, the altar and organ loft were reconstructed, including some of the timbers in the loft. The Consigli masonry crew also reconstructed some of the marble balusters, marble stairs and a marble niche. J.C. Stone, Jefferson, ME, supplied marble for the project. R.G. Eaton Woodworks of Westbrook, ME, rebuilt the window frames and Heritage Co. of Waterboro, ME, repaired the slate and copper roofing.

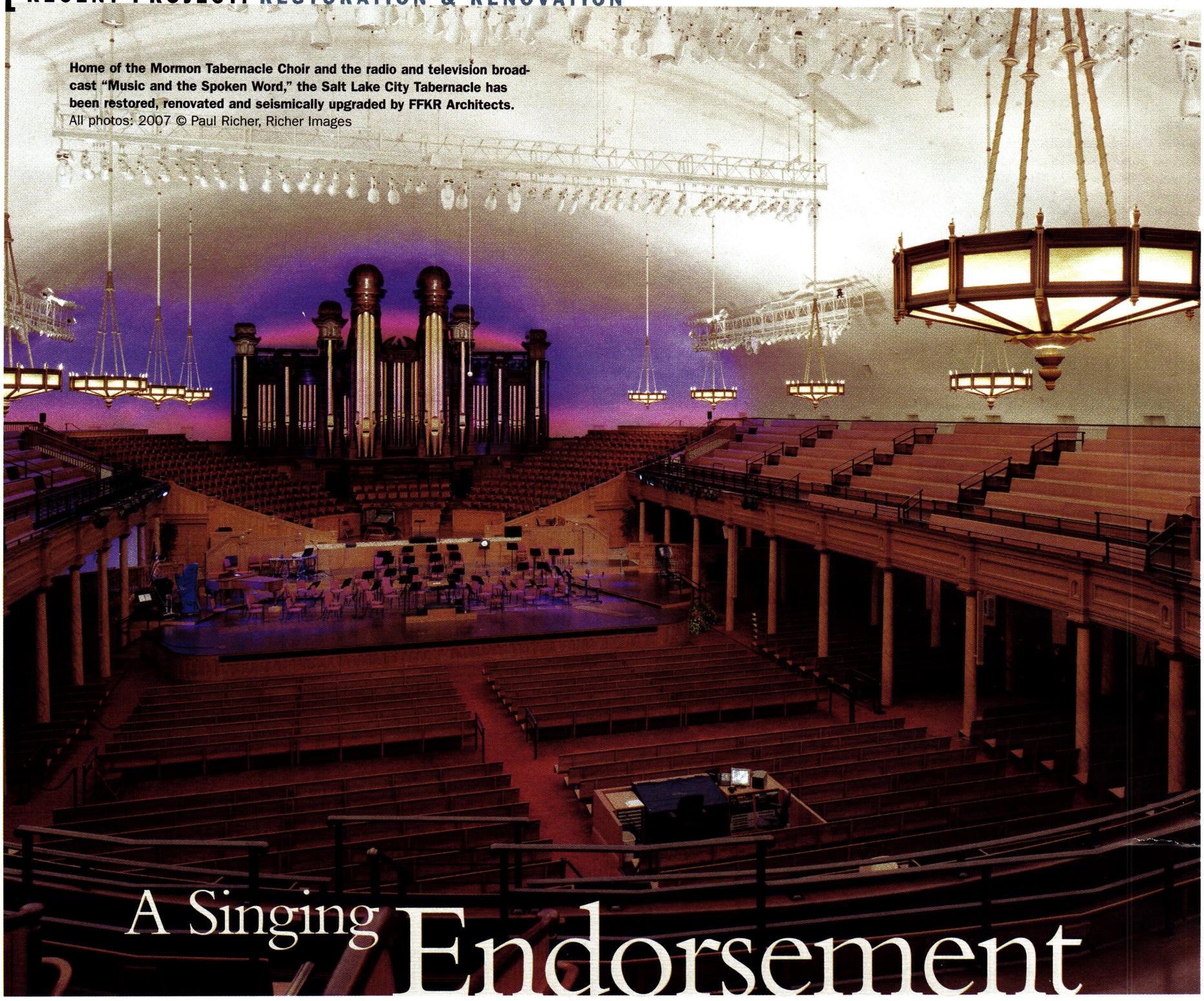
This project had a number of unusual challenges. For one thing, Tonello notes, the local rubble stone is no longer available so it could not be replaced. "If we had a damaged stones, we could no longer go and find them on the coast of Maine. So we had to catalog all of the stones and make sure we put them back in the same place." (It's not that there's no rubble stone left in Maine, but it is now illegal to harvest ocean-washed stone because of environmental regulations.)

Another challenge was the weather. Since the church is used in the summer, the work had to be done during the off-season. "The remote location and the weather made it difficult," Tonello notes. "There is no winter water or heating in the building, so we had to bring that in. We had temporary gas-fired heaters to provide heat inside the tents for the scaffolding. And we constructed a mortar-mixing station so it wouldn't freeze."

One of the original members of the congregation has been quoted as saying that the church was built of stones to "give the impression of permanence." Thanks to the recent work by the Consigli tradesmen who were willing to brave the harsh winter weather and Maine coastal winds, that goal has been achieved. The historic St. Ann's church with its thick rock walls is now ready to serve its summer-only community for at least another 100 years. – *Martha McDonald*

**Above: When repointing the stone in the interior, a dark mortar was used so that it would be less visible. The church's stained-glass windows were restored by Phoenix Studio in Portland, ME.**

**Left: The restoration of the altar involved gold leafing and paint work.**



**Home of the Mormon Tabernacle Choir and the radio and television broadcast "Music and the Spoken Word," the Salt Lake City Tabernacle has been restored, renovated and seismically upgraded by FFKR Architects.**
All photos: 2007 © Paul Richer, Richer Images

# A Singing Endorsement

**PROJECT**
The Salt Lake Tabernacle, Salt Lake City, UT

**Architect**
FFKR Architects, Salt Lake City, UT; Roger P. Jackson, AIA, principal

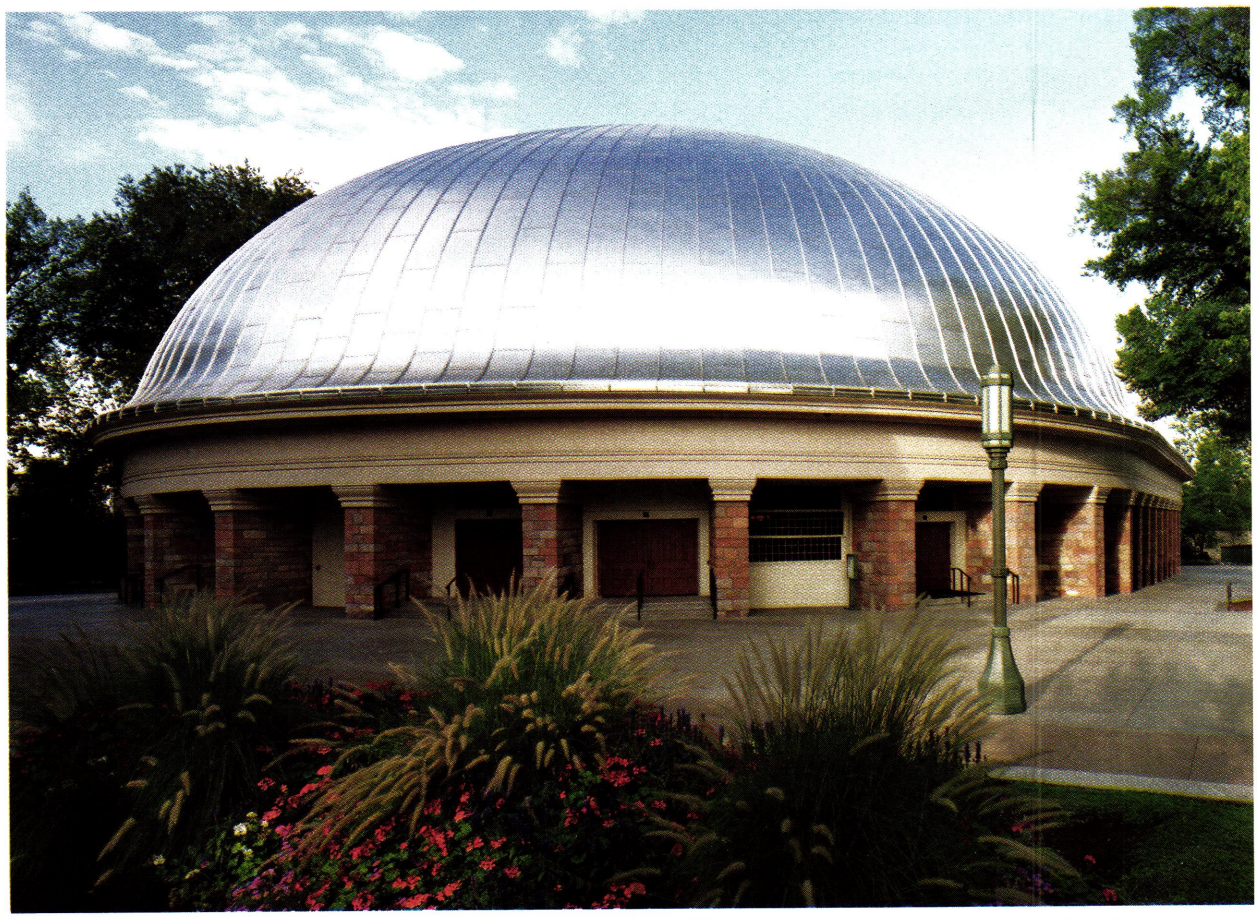
ON JULY 15, 1929, the first broadcast of "Music and the Spoken Word," from Salt Lake City, UT, began with the following: "From the crossroads of the West, we welcome you to a program of inspirational music and spoken word." Like much of the half-hour feature, this introduction remains unchanged today, and is carried by more than 2,000 radio, television and cable systems every Sunday.

"Music and the Spoken Word" has been broadcast from a number of national and international locations, but its home – and that of the 360-strong Mormon Tabernacle Choir – remains the tabernacle on Temple Square. Built between 1863 and 1869, the building's turtle shape effectively and naturally amplifies church leaders' voices, and proved so popular upon opening that a balcony was built in 1870 to accommodate the growing congregation. The tabernacle remained virtually untouched for the next 130 years – a period that saw great technological strides in lighting, and of course in broadcasting and recording technology. All were accommodated within the original design, albeit with some visual clutter, until one day church leadership asked the very pertinent question, "How would this building cope in an earthquake?"

Using an earthquake simulation program, FFKR Architects, also of Salt Lake City, investigated the effect that the Northridge California quake of 1994 would have on the 97,000 sq. ft. tabernacle's giant stone piers and wood trusses. The answer was not favorable: "The study showed that the big stone piers, which are three ft. wide, nine ft. long and vary in heights from 12 to 21 ft., would start to tip over," says Roger P. Jackson, AIA, principal. "And at about the same time, the big wood trusses would slide from the tops of them. So to the question, 'How would it cope?' the answer was, 'Not very well.'"

On the basis of the data, church leaders commissioned FFKR to carry out a feasibility study on a comprehensive seismic upgrade, which identified the need for removal and replacement of all building, mechanical, electrical and broadcast systems. Studies also identified fire and crowd management issues with the balcony; it took twice as long to vacate as the main floor and could only be accessed via exterior doors. Additionally, since the building accommodates a variety of uses, the building owners requested additional flexibility in the arrangement of the rostrum.

Working closely with structural engineers Reaveley Engineers and Associates, and general contractor Jacobsen Construction Company, Salt Lake City, UT, FFKR began work in 2002. The project was a delicate balancing act, as the building owners specifically requested that none of the upgrades have any visual impact. "But in



**The building is located on Temple Square and surrounded by 120-year-old trees. Its standing seam metal roof, in shiny, mill-finished aluminum, glints in the sun.**

**Two new exit stairs help move crowds from the balcony to the main hall and aid fire safety. The detailing matches the balcony railing and adjacent features.**

the meantime," says Jackson, "we had to pull out 130 years of leftover wires that people had just cut and left in place, and we had to bring it up to code and upgrade the technology for the ongoing broadcasting requirements. It really was a matter of stitching together all of the pieces."

Much of the tabernacle's seismic vulnerability was due to the isolation of its 44 stone piers – "nothing was really tied together," says Jackson. The firm reinforced these giant piers with a "saddlebag footing," whereby each was core drilled, and then strengthened with reinforcing bars. The footings were linked at the base with a below-grade wall, which also ties to the floor, and braced at the top with a horizontal steel truss between each pier. "The floor acts as a stiffener to hold all of these columns in place," says Jackson. "And at the top, one column can't tip over without pushing one neighbor and pulling the next."

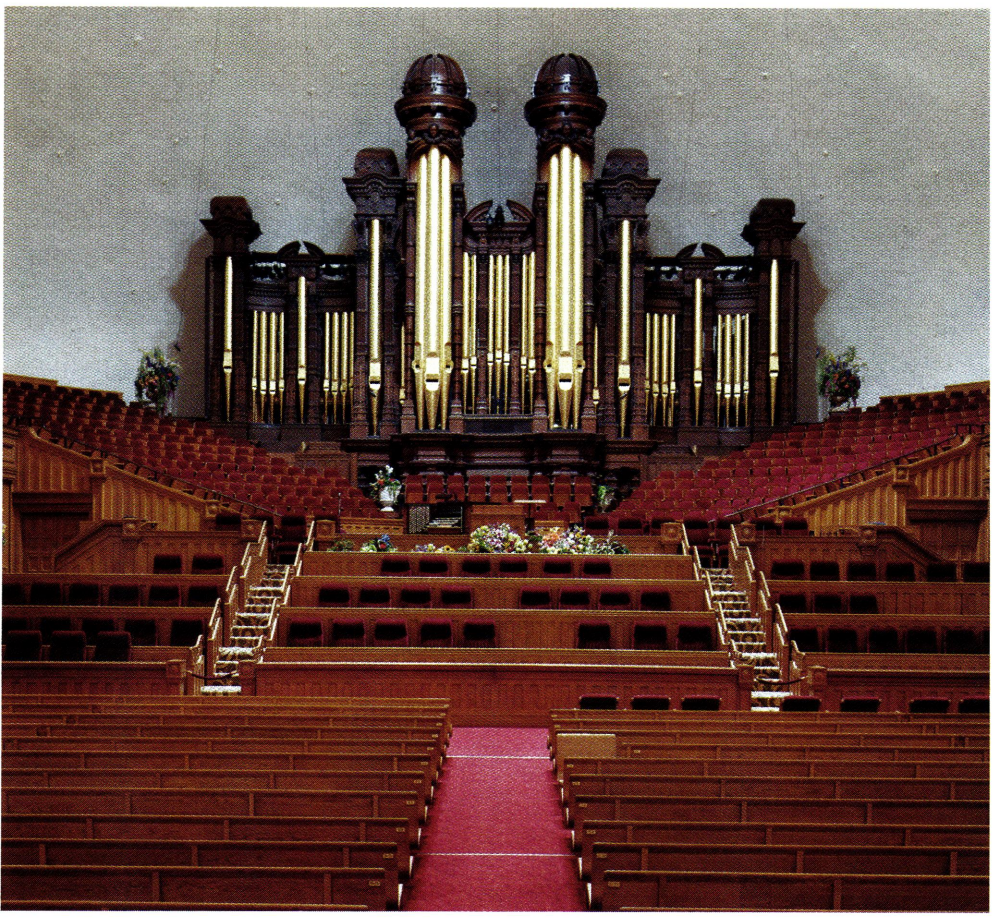
The stone piers support giant wood lattice trusses, which are elliptical in shape; half trusses, arranged radially, form a semicircle at either end. As the "king trusses," which support the radials at either end were heavily over-stressed, the design team added a steel "sister" truss to assume the load – a tricky process given the commitment to conserving the building's original appearance. "We didn't want to take off the whole roof, unzip everything, to drop in a big truss all at once," says Jackson. "We kept the plaster finishes and we didn't know the damage that would be caused to the them if we took the whole roof off. So we'd take off a small section, slip in a piece of the new truss, build the roof back, take off some more, build the roof back… and so on, in sequence, until the truss was in place, carrying its own weight." Lastly, the weight of the old truss and the radial trusses on the ends, were transferred to the new truss. "That was a tricky day," adds Jackson.

Prior to the installation of a new aluminum roof, the firm installed a new diaphragm of half-inch plywood over the old roof sheathing – as opposed to utilizing a complex system of cross-trusses and ties. This new diaphragm, attached to the roof sheathing and the tops of the trusses, also provided additional stiffness and stability.

After the stone footings and wood trusses, the tabernacle's next biggest liability in a seismic event was its priceless 32-ft. tall, 11,623-pipe Aeolian-Skinner organ. Since reaching its present size in 1915, the organ has had a unique sound that is the pride of the Tabernacle Choir. Rocky Mountain Organ Co. of Salt Lake City painstakingly cleaned and stored each piece, from the largest pipes to those the size of pencils. The structure was stabilized, and the organ casework, woodwork and gold leaf refinished before the entire instrument was rebuilt.

Preserving the organ's sound was central to the entire project and, aside from the restoration of the instrument itself, required consistent attention to the acoustical effects of each and every upgrade. "We did a lot of work that

**From the event control booth at the rear of the hall, AV operators control the lighting scenes and cameras.**



**Most often, the rostrum is in "conference mode," with seating provided for church leaders close to the organ console. The entire rostrum is modular, and can be re-configured for meetings and performances.**

**The basement conceals rehearsal spaces, where the Tabernacle choir can practice and record.**

could potentially change sound absorption," says Jackson. "We supported – and therefore stiffened – the giant plaster ceiling, and we took out some of the seats, changing the distribution of people, who absorb sound, in the room. We worried that these changes would alter sound of the room, and we knew that they had to be offset in some way."

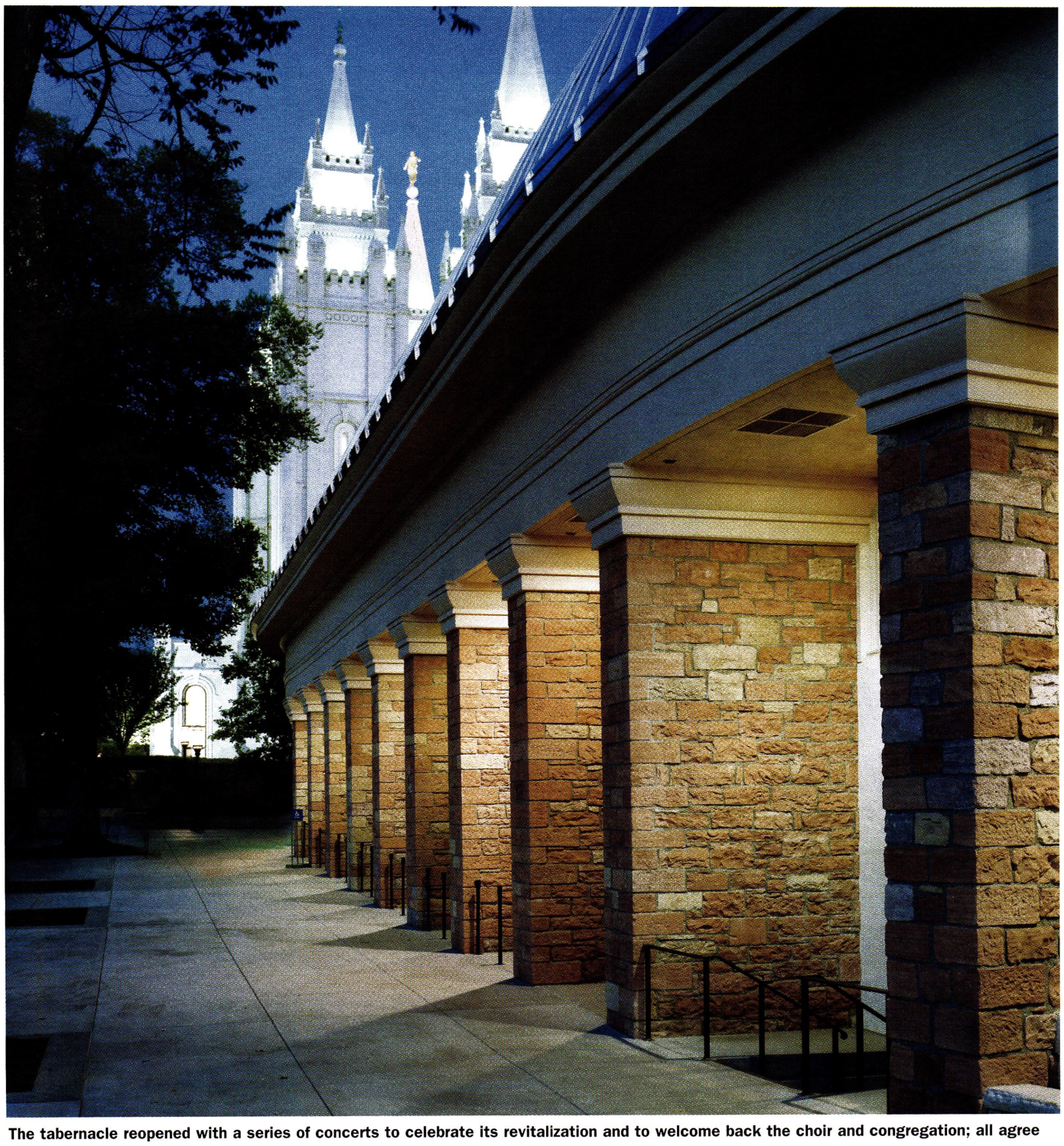
The original lime plaster ceiling had been reinforced with animal hair and covered with approximately 14 layers of paint, many of which were lead-based. After stripping the paint with a series of organic chemical removers, FFKR and Evergreene Architectural Arts of New York City tried a variety of different re-patching materials, aiming for the cleanest finish and best acoustical result. With the help of a Brigham Young University masters student in acoustical engineering, the team used pre-testing data to analyze small patches and assure that the new plaster would have similar acoustical properties. Even so, the process was hit-and-miss. "We found a plaster that was very good, but wouldn't adhere to the old stuff," says Jackson. "But we managed to find another plaster product that would adhere well, was the right color and had the right properties. All to preserve the signature sound of the organ and the acoustics of the hall."

While most of the signs of restoration are carefully concealed below grade or in the attic, some improvements are deliberately visible. To improve circulation to and from the balcony, FFKR added two new stairs for balcony access, and modified the original exit stairs to connect to the main hall. Replica pews are spaced further apart, increasing comfort but reducing capacity by around 1,200 to 3,500. The new rostrum now accommodates several physical arrangements, including small conference with the pulpit down low; large conference with the pulpit at the upper level; and a full orchestra set-up and smaller stages. "With our stage consultant [Tom Neville at Auerbach, Pollack, Friedlander of San Francisco], we developed a series of modular pieces that could be stored away in the basement and brought up in sequence to reconfigure as necessary," says Jackson. "One of those pieces is a hydraulic lift that goes all the way down to the basement, so all of the pieces can be stored away in an adjacent structure and brought back up as necessary."

Besides the support spaces for the organ, an underground organ repair shop, recording, rehearsal, wardrobe and dressing spaces were also revised. And to better blend with Temple Square, the tabernacle's grounds were repaved and its planting beds restored by MGB+A of Salt Lake City.

The attention to detail paid off – the choir's verdict has been overwhelmingly positive. "Like a football team or a basketball team would say, they have a home field advantage," says Jackson. "This is their home. They love to play here and they have told us it sounds better than ever."

After a two year closure, the tabernacle reopened with a series of concerts to celebrate its revitalization and to welcome the choir back to its "home field." "Frank Lloyd Wright called the tabernacle, 'one of the architectural masterpieces of the country and perhaps the world,'" says Jackson. "The building itself and its organ are treasures in the local community, the American architectural community and the worldwide musical community, and I'd like to give my compliments to the church leaders for committing to this building, from its initial construction to its preservation and adaptation. It is a wonderful example of pioneer construction enduring and adapting throughout the years, and it is a testament to the church and the community that it stands so proud today." – *Lynne Lavelle*



**The tabernacle reopened with a series of concerts to celebrate its revitalization and to welcome back the choir and congregation; all agree that it looks and sounds better than ever.**

**Web Extra: Additional photos can be seen at www.traditional-building.com/extras/Dec09Tabernacle.htm.**

**Modernist Pietro Belluschi designed the Church of St. Gregory the Great in 1960, which has become the centerpiece of a monastery-run boarding school in Portsmouth, RI. The church uses dark wood, fieldstone and stained glass in a spare design featuring an octagonal central volume topped with a spire.** Photo: Nat Rea

# In Praise of Color and Light

**PROJECT**

Church of St. Gregory the Great, Portsmouth, RI

**Architect**

Newport Collaborative Architects of Newport, RI; Michael DeMatteo, AIA, senior associate

THE COMPUTER ANALYSIS confirmed what the Benedictine monks already knew: Their chapel, the Church of St. Gregory the Great in Portsmouth, RI, swayed and leaked during high winds and storms. In the nearly 50 years since the church's construction, the movement had weakened structural supports and opened the seams around the stained glass windows. As part of their plans for the chapel's restoration, the monks had commissioned a structural engineering analysis, which quantified the stress on the building.

"The structural engineer programmed a computer model with the existing conditions at the chapel," says John Brooks, president of Advanced Building Concepts of Middletown, RI, part of the interdisciplinary team assembled for the project. "When we hit the model with about a 100-mile-an-hour wind, the building would slant six or eight inches, and that was destabilizing the building. It was like a rickety box."

Designed by Pietro Belluschi and built in 1960, the church is the centerpiece of the Portsmouth Abbey campus, a 350-student boarding school operated by the monastery. A noted Modernist, Belluschi designed several buildings on the campus, and it is considered the largest collection of his work. The church marries earthy and traditional materials – dark redwood, fieldstone and stained glass – with a modern silhouette featuring an octagonal central volume topped with a spire. Each of the eight bays is lined with long, thin vertical panes of colored glass that form a clerestory level. At the center of the church, above the altar, hangs a massive and dramatic metal sculpture by Richard Lippold, an abstract artist who collaborated with such modern architects as Walter Gropius and Philip Johnson during his lifetime. Called "The Trinity," the sculpture radiates some 20,000 feet of gold-plated wire out from a crucified Christ figure.

But problems were evident from the outset, according to Brother Joseph Byron, one of 14 or so monks who reside on the campus. "From day one the building leaked like a sieve," he says, "and the stained glass couldn't take that movement. We had leaks around the lead work in those windows. For years we would try to putty and caulk it in and do other things to slow down the deterioration."

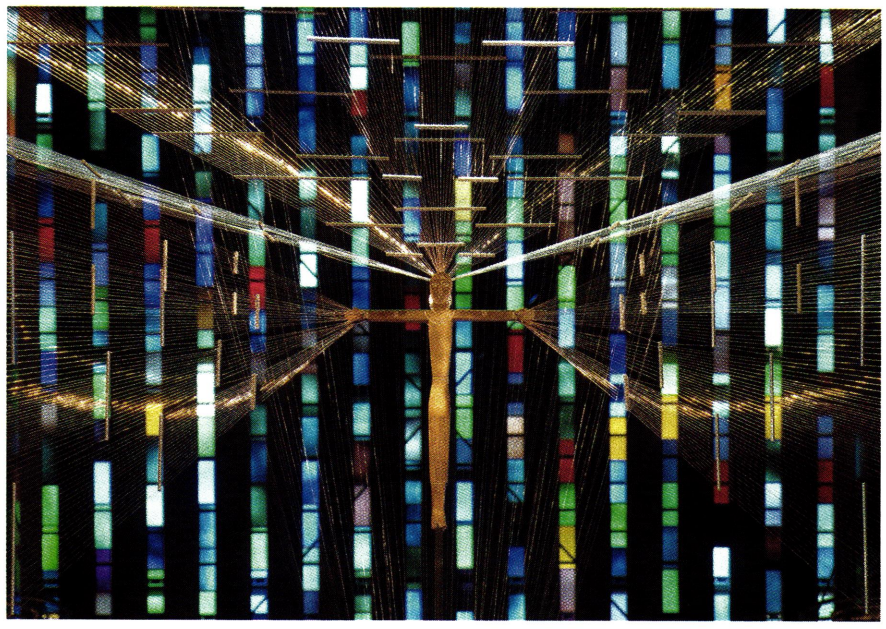
The wire that Lippold chose for the sculpture, furthermore, was fairly inexpensive and the gold plating was very thin, so that some of the wires cracked even during the initial installation. Years of air and water leakage had also damaged the wires and fostered corrosion.

Ultimately, the monastery convened a team of mostly local designers, engineers, art restorers and contractors to tackle the $4-million restoration of the chapel. Their first challenge was to determine an adequate stabilizing mechanism for the structure that would not detract from its historic appearance.

**The eight bays of the clerestory level feature long, thin vertical panes of colored glass, which were once so vibrant and colorful that the monastery sought to tone it down. Adding an outer screen of blue glass both muted the spectrum and helped the colors to cohere with one another better. For the restoration, all the glass was cataloged, removed, restored and replaced with new art glass where necessary, including replacement blue panels.** Photo: Aaron Usher

**From the moment it was completed, the church was susceptible to movement and leaking in storms and high winds. The restoration team tested various ways to stabilize the structure before settling on a series of X-shaped cross-braces made of one-inch steel rods. Installed on the interior of the eight central window bays, the X shapes almost disappear against the light filtering through the glass.** Photo: Aaron Usher

**A massive metal wire sculpture by Richard Lippold, an abstract artist who collaborated with such modern architects as Walter Gropius and Philip Johnson, hangs above the church altar. Called "The Trinity," the sculpture features some 20,000 feet of gold-plated wire radiating out from a crucified Christ figure.** Photo: Aaron Usher



**Because the wire that Lippold chose for the sculpture was fairly inexpensive and the gold plating very thin, some of the wires cracked even during the initial installation. Over the years, the sculpture had also lost its luster and taken on a dull, gray appearance, before the art restoration firm Newmans Ltd. painstakingly removed, reconstructed and reinstalled the now-gleaming work.** Photo: Aaron Usher

"We started working at the school in 2003, when we were commissioned to do an exterior envelope analysis," says Michael DeMatteo, AIA, senior associate at Newport Collaborative Architects of Newport, RI, and the project architect for the restoration. "It lacked significant lateral bracing, so we embarked on a number of designs to fix the sway in the building." The team ultimately decided on a series of X-shaped cross-braces made of one-inch steel rods. Installed on the interior of the eight central window bays, the X shapes almost disappear against the light filtering through the glass. "There's such a play of light and dark between the glass and the redwood that the bracing really does go away," DeMatteo adds.

Dealing with the glass itself proved to be an exercise in cataloging and precision. Belluschi's design called for a profusion of bright colors in the glass panes, creating a random pattern. Once the monks saw just how bright the finished panels were, however, they opted for something a little more subdued. The monastery then installed panels of dark blue glass around the outside of the church, which took the edge off the bright color scheme and helped the panes to cohere with each other. "This was 1960, so it was the most colorful palette you'd ever seen in your life," Brother Joseph says. "So by happenstance, we ended up with storm windows with the blue glass."

What the monks did not know until the restoration, however, was that even the addition of the blue exterior panels had not been enough to dampen all the color sufficiently. During the restoration the team discovered that some panes had a third additional piece glued onto them, to make them even darker. After studying the structure, the team determined that enough wood rot and damage had occurred that they would have to completely remove the more than 4,200 panes of glass and completely rebuild the framing, whose 25-ft.-long timbers had to be harvested, milled and shipped from British Columbia.

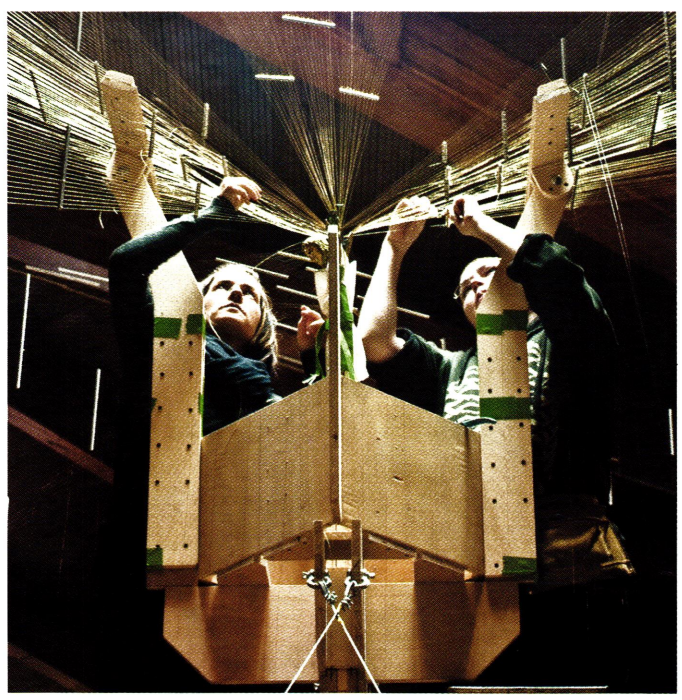
The glass panes were each carefully cataloged and organized and sent to the Newton, MA-based studio of Artigiano Stained Glass for cleaning, caulk removal and restoration. New art glass was commissioned where needed, including replacement dark blue storm panels. Even with the slightly muted palette provided by the blue backdrop, the glass now shines with more brilliance than before, according to Brother Joseph.

In the half-century since its installation, Lippold's sculpture had also lost its once-vibrant gleam, as dust and wear had given the wires a dull silver appearance. Yet removing, refabricating and reinstalling the sculpture were not straightforward tasks, as art restorers Howard and Mary Newman, of Newport-based Newmans Ltd., quickly discovered. Lippold had installed the wires one by one in a series of 13 triangular shapes or arrays, fanning out in different directions. The wires themselves were tightened and tied together with mechanisms that reminded the Newmans of guitars, piano

**Lippold installed the wires for "The Trinity" in a series of 13 triangular shapes or arrays, fanning out in different directions. To remove and restore the work, the Newmans crafted a series of scaffolds and other contraptions that allowed them to lock the arrays in their relative positions and then remove them section by section. Once the arrays were locked into position on a loom, the wires were replaced with new gold-plated wiring commissioned for the project.** Photo: Howard Newman

**The six-foot cross and the 18-inch Christ figure at the center of the Trinity sculpture were also carefully cleaned and refurbished.** Photo: Howard Newman

**In addition to the glass, bracing and sculpture restoration, the design team developed a new lighting scheme for the church, replacing several dark canister lights, held together by a maze of wiring, with more streamlined multi-headed light fixtures. With the restored glass and the new light fixtures, the church once again has a bright, welcoming appearance.** Photo: Aaron Usher



**After studying similar fixtures on guitars and ships, the art restoration team applied the precise tightening and tension to the wires through the use of screw eyes on wooden boards, a process akin to piano tuning pegs. Howard Newman says that numerous mechanisms were developed as part of this unique project.** Photo: Howard Newman

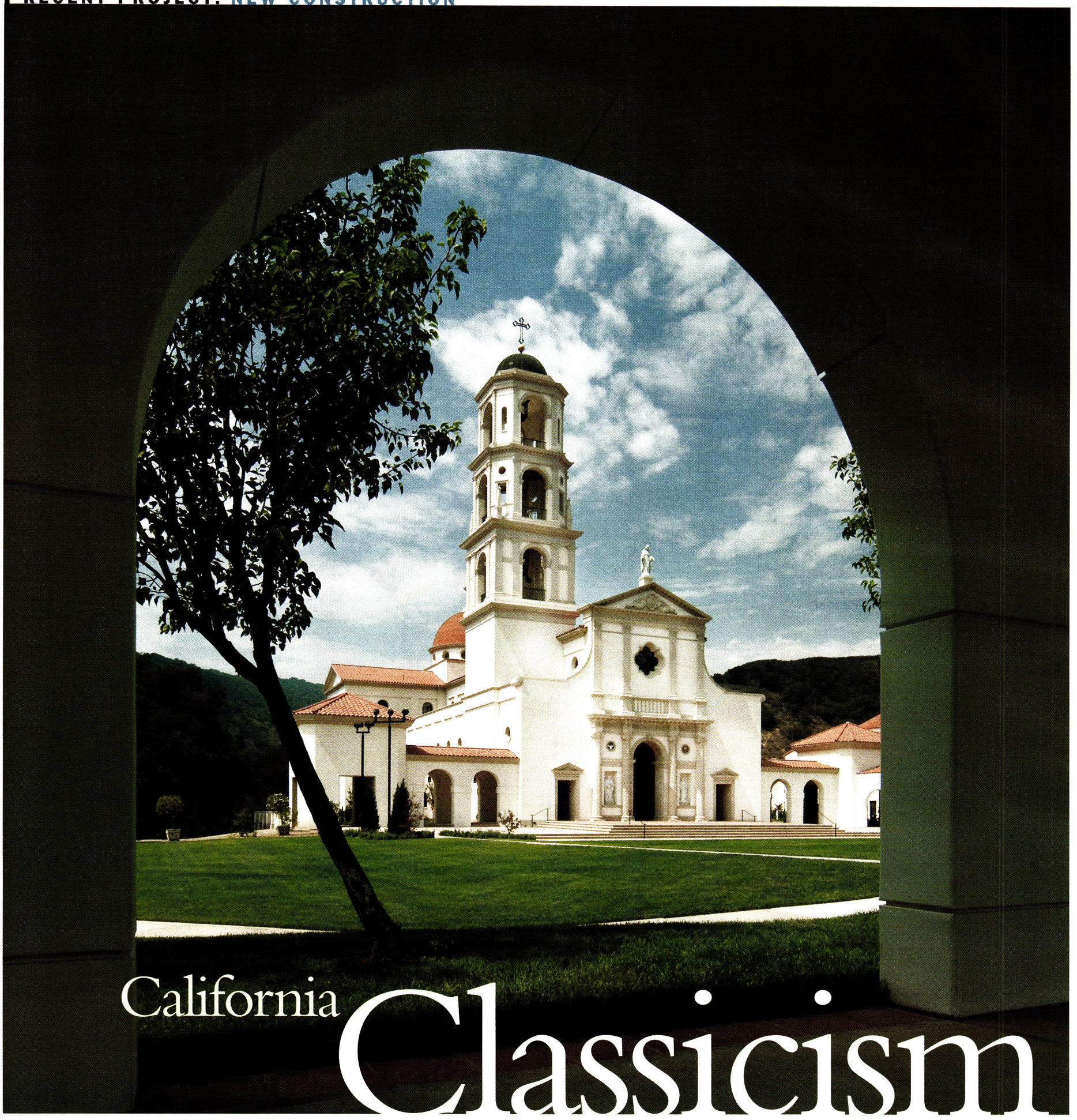
strings or even sailboats (Portsmouth is, after all, an island town with a large nautical presence). These similarities helped the Newmans to determine how to restring and hang the sculpture.

"Basically when I look at a problem, I look at its analogies in the world," Howard Newman says. "Lippold was an utter genius. The more we got into it, the more we realized it was like taking apart a piece of music by a jazz musician. Every step you took, you saw more of the structure and the liberties he took with it. We probably invented 100 tools in the process of doing this restoration."

The Newmans decided to craft a series of rigs that would allow them to lock the arrays in their relative positions and then remove them section by section. Each array was then rolled up in carpet padding and installed on a loom that the Newmans had constructed in a local boat shed. Once the arrays were locked into position on the loom, the wires were replaced with new gold-plated wiring that the Newmans had commissioned for the project. Called clad wire, the material is much suppler and less prone to cracking than the original material. Reinstalling the sculpture was painstaking, with the Newmans applying the precise tightening and tension to the wires through the use of screw eyes on wooden boards, a process akin to piano tuning pegs. The six-ft. cross and the 18-in. Christ figure were also carefully refurbished and returned to their central position within the sculpture.

Finally, the architects developed a new lighting scheme for the church, replacing a series of dark canister lights, held together by a maze of wiring on the ceiling, with far more streamlined multi-headed light fixtures. "The ceiling is so beautiful, and it's all wood," DeMatteo says. "With the mess of wires, it was visually distracting. Now, with the glass and everything done, you can really appreciate the architecture of the church." – *Kim A. O'Connell*

**The restored church serves both the 14 or so Benedictine monks who run Portsmouth Abbey as well as the 350 students who attend the boarding school. Famous graduates or former students include Sens. Robert F. Kennedy and Edward M. Kennedy and writers and critics John Gregory Dunne and Christopher Buckley.** Photo: Nat Rea



# California Classicism

**PROJECT**

Our Lady of the Most Holy Trinity Chapel, Thomas Aquinas College, Santa Paula, CA

**Design Architect**

Duncan G. Stroik Architect, LLC, South Bend, IN; Duncan Stroik, principal; Stefan Molina, design project architect; Tony Bajuyo, construction project architect

**Architect of Record**

Rasmussen & Associates, Ventura, CA

A NEW 15,000-SQ.FT. CHAPEL with a dome and a bell tower reaching 135 ft. into the sky now seems to grow out of the landscape in the hills about an hour out of Los Angeles. It is the new centerpiece of the campus at Thomas Aquinas College in Santa Paula, CA. Designed by Duncan Stroik, the new Our Lady of the Most Holy Trinity Chapel combines Early Christian, Renaissance and Spanish Mission styles. The $25-million project was dedicated in March 2009 after 3½ years of construction.

The cruciform-shaped stucco and limestone building is one of the largest new churches built in the Classical style in the U.S. in recent history. It follows another Stroik-designed new construction project, the 35,000 sq.ft. Our Lady of Guadalupe in La Crosse, WI, completed in 2008 (See *Traditional Building*, December, 2008, page 20). In addition to the Classical styling of the exterior, Our Lady of the Most Holy Trinity Chapel also features Classical ornamentation on the interior including Corinthian columns flanking the nave, a marble inlaid floor leading to the altar, statuary and paintings.

The new chapel was designed to be the crown jewel and the heart of the campus for a college founded in 1971. Spearheaded by recently deceased Thomas Aquinas president Dr. Thomas E. Dillon, the chapel is the result of a 10-year effort that involved trips to Europe to study different architectural achievements and a concerted effort to complete a cohesively designed campus. In a 2003 issue of *The Catholic World Report*, Dillon was quoted as saying, "We had in our mind that our campus would be an ordered whole and that the chapel would be the most important building on the campus."

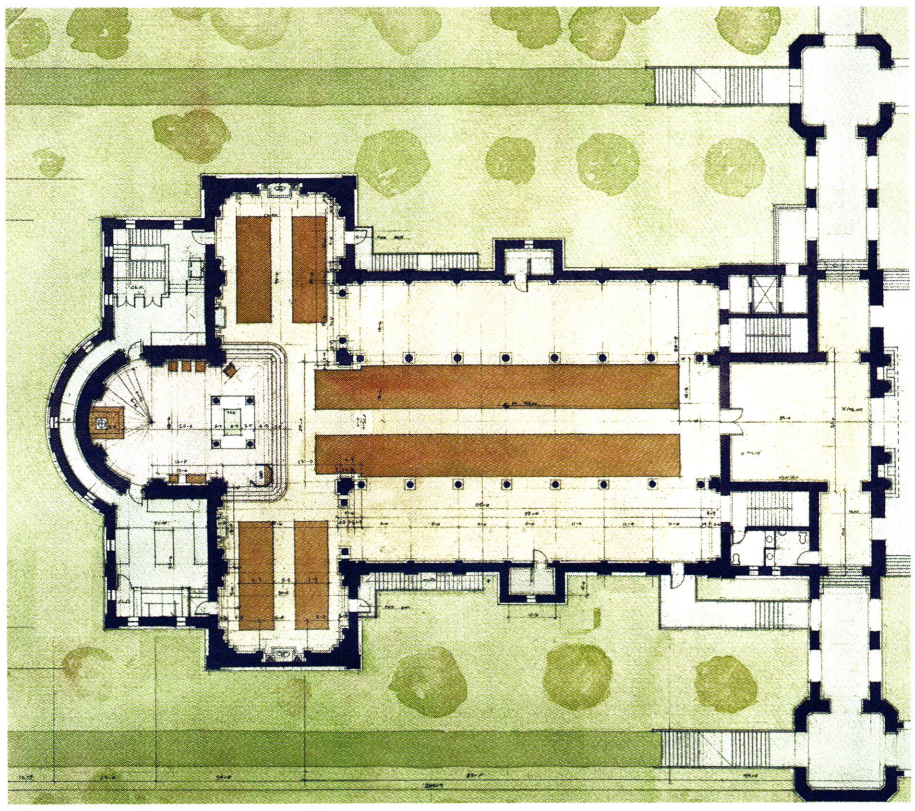
The current president of the college, Peter DeLuca, has been involved with the project from the beginning. He points out that the school was founded as a beacon for Catholicism and Classical education at a time when there was movement away from those values in this country. "The chapel stands at the head of the academic quadrangle to complete the campus," he says. "The Classical design goes with our Classical curriculum and there was a desire to tie the college into the southern California tradition and also to Rome."

Duncan Stroik, principal, Duncan G. Stroik, LLC, of South Bend, IN, has been quoted as saying that the goal of the design was "to be timeless, rather than of our time. The new chapel will be an alternative to the novelty and shock value of contemporary architecture in the news today. Rather than designing it to have maximum shock value … we have sought to design something for posterity. The chapel will be built to last hundreds of years and is designed to not go out of style."

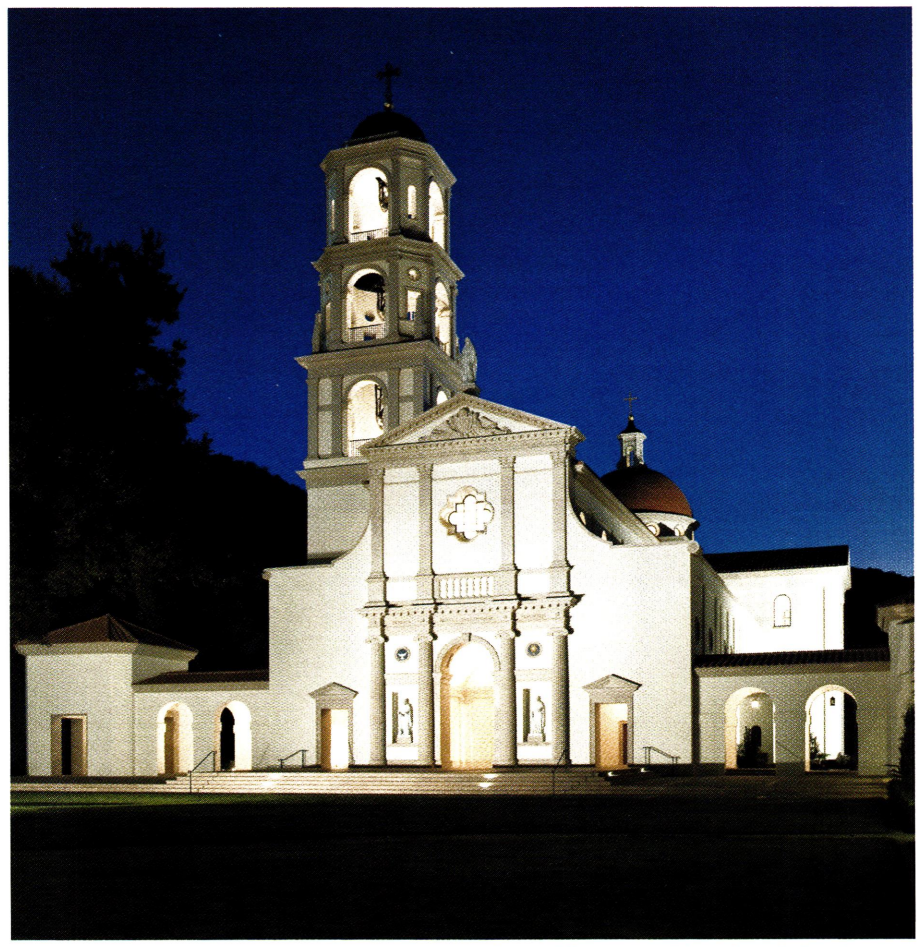
"The client wanted a cruciform building, a dome over the crossing, columns and arches," says Stroik. "It sounded very traditional to them, but in the history of ecclesiastical architecture, that is not a combination you see often. Essentially they wanted an ancient basilica transformed into a cruciform shape with a dome added."

The exterior is notable for its Classical entryway, dome and bell tower, all of which draw their roots from history. Brunelleschi's churches built in Florence during

**Above: Designed by Duncan Stroik Architect, LLC, Our Lady of the Most Holy Trinity Chapel at Thomas Aquinas College in Santa Paula, CA, is one of a very few classically styled new churches built in the U.S. in recent history. It is nestled in the hills northwest of Los Angeles and draws from Rome and California for its historic precedents.** Photo Stephen Schafer, Schaf Photo Studios



**The chapel is designed in the cruciform plan with the dome over the altar. Pews in the nave, transept and loft seat 450 people. The arcade runs through the chapel, connecting it to the college's quadrangle.** Plan: Duncan Stroik Architect



**The front façade was designed as the *Porta Coeli* (Gate of Heaven), with a triumphal archway flanked by fluted Indiana limestone Ionic columns and molding. Marble statues of St. Augustine and St. Thomas Aquinas flank the entry.** Photo: Stephen Schafer, Schaf Photo Studios

the 15th century, for example, provided inspiration for the 32-ft-dia. (exterior dimension, interior is 27 ft.) dome that is 72 ft. to the oculus over the baldacchino, 89 ft. from the floor to the exterior cornice (exterior dimension is 103 ft. above grade). Prompted by Dr. Dillon, Stroik also looked to Californian architectural traditions when designing the chapel. The bell tower is modeled somewhat on that of St. Mary Magdalene Chapel in Camarillo, CA, while many other local churches also influenced the final design.

"Like Our Lady of Guadalupe, the client had a grand vision and a beautiful site and wanted high-style architecture," says Stroik. "They were thinking that it was a Spanish mission version of the Lawn at the University of Virginia, with the chapel replacing Jefferson's Rotunda. It was interesting to think about how a chapel fits into a campus. They had the arcade going around the main quadrangle, so we decided to let the arcade connect to the chapel by going through it."

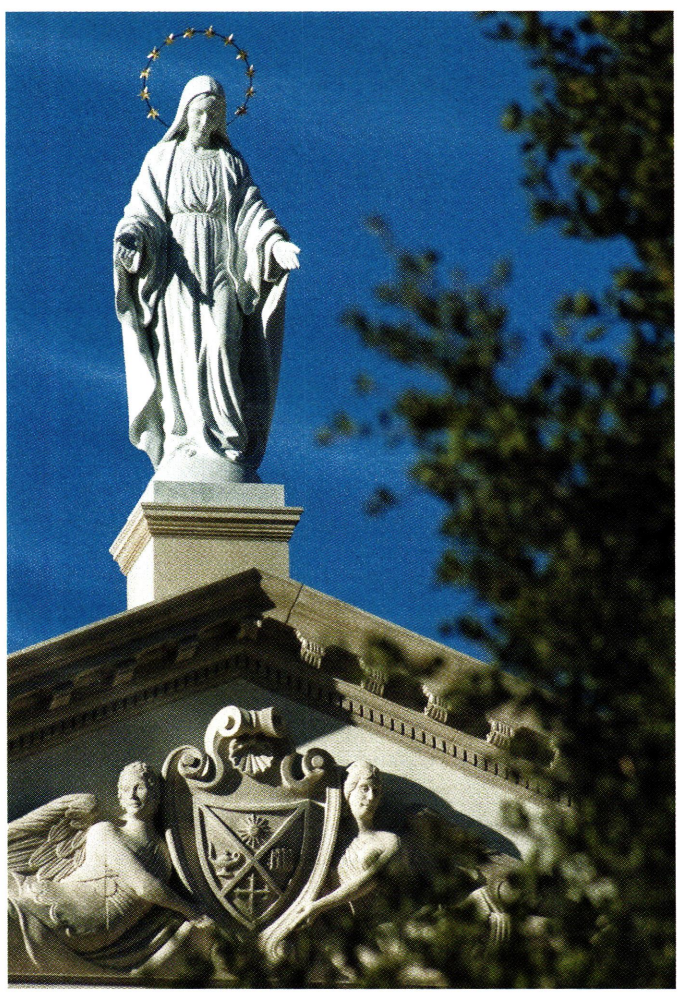
The front façade, seen as a *Porta Coeli* (Gate of Heaven), features a triumphal archway flanked by fluted and spiral fluted Indiana limestone Ionic columns and molding. Niches on either side of the doors contain marble statues of St. Augustine and St. Thomas Aquinas, signifying active and contemplative lives.

The pediment (approximately 4 ft. tall x 15 ft. wide) over the front façade frames the college's coat of arms held by two giant angels. Standing on top of the pediment is a free-standing approximately 8 ft.-tall marble statue of Our Lady of the Most Holy Trinity. "She is approximately 65 ft. off the ground and is visible from everywhere on the campus," says DeLuca. "It was quite an engineering feat to mount this statue," he adds. Latin inscriptions also grace the front of the building. The Mary statue, St. Augustine and St. Thomas Aquinas were sculpted in clay by Giancarlo Buratti and carved in carrera marble by Studio Cervietti in Pietrasanta, Italy.

The columns on the front of the building were custom carved by the artisans at Bybee Stone of Bloomington, IN. Stroik says they considered cast stone but decided to stay with the carved limestone. "The cost was competitive because it was a very custom job," he notes.

Bybee Stone supplied the Indiana limestone and was also responsible for carving the pediment featuring the college's coat of arms. "When we designed the pediment, we modified the college's coat of arms, giving it more depth and detail," says Stroik. "The college was happy with it, so they changed their coat of arms to match the pediment."

The three-tiered 135-ft. bell tower contains bells that are hand rung. Originally the bell tower was to be stucco with limestone detailing like the rest of the building, but there were concerns about the cost. After exploring other options and a visit to St. Ignatius in San Francisco where Stroik saw a100-year-old metal bell tower still in good shape, the college decided on a metal tower. They turned to Munns Manufacturing of Garland, UT, to create it. The tower was then painted to match the limestone and stucco.



**Carved in Italy by Studio Cervietti in Pietrasanta, this 8-ft.-tall marble statue of Mary stands on top of the entry pediment and is visible from all parts of the campus. She is approximately 65 ft. above ground. Designed by Tony Bajuyo in Stroik's office, the pediment features the college's coat of arms held up by two giant angels. It was carved by artisans at Bybee Stone.** Photo: Stephen Schafer. Schaf Photo Studios

**The interior of the chapel features 16-ft. marble columns (including the Botticino marble shaft, Apuano base and plaster capital) on either side of the nave, wide side aisles, a vaulted ribbed ceiling and an inlaid marble floor that leads the eye to the altar and tabernacle. Lighting is primarily from the clerestory windows, with recessed uplights in the cornice.** Photo: Stephen Schafer, Schaf Photo Studios

**Inspired by St. Peter's Basilica in Rome, the baldacchino features Solomonic bronze columns. Designed by Stroik, the ecclesiastical furnishings, including the baldacchino, altar, tabernacle and altar rail, were fabricated by Talleres de Arte Granda of Madrid, Spain. To the right is one of the murals painted by EverGreene Architectural Arts. The firm's artwork can also be seen in the pendentive.** Photo: Stephen Schafer, Schaf Photo Studios

**The dome above the baldacchino is divided into 12 parts representing the 12 apostles. It has 12 oculi to bring light into the sanctuary. The 32-ft.dia. dome is 89 ft. above the floor. Artwork in the ceiling of the baldacchino represents the Holy Ghost.** Photo: Thomas Aquinas College

"The tower is primarily aluminum, with a steel structure," explains Munns director of sales and marketing Tim Thompson. "We built it in our plant in Utah and then broke it down just enough to transport it to California. When we got to the site, we off-loaded and reconstructed it, hoisting the parts into place." He adds that this is typical of the replication work done by Munns, which also has a plant in Virginia. Munns workers handle all parts of the process – building the structure, transporting it (in this case it took 17 tractor-trailers) and reconstructing it onsite. "These structures are lightweight and virtually maintenance free," he adds, "and it is more economical to build it in our plant rather than onsite."

The classical experience continues as the visitor moves through the arcade to enter the chapel through 12-ft.-tall bronze entry doors (supplied by Louis Hoffmann Co., Menomonee Falls, WI). The doors are topped with a bas relief, "The Coronation of the Virgin Mary," one of the original pieces of artwork fabricated by EverGreene Architectural Arts (EAA) of New York City.

The nave is flanked on either side with seven arches, which are supported by 14-ft. tall marble Corinthian columns and an entablature supporting the ribbed vaulted ceiling. The inlaid marble floor leads the eye to the altar and baldacchino under the dramatic dome. The baldacchino features cast bronze Solomonic columns and a painted and gilded wood canopy with four angels standing at each corner. The sanctuary furnishings – tabernacle, baldacchino, altar and altar rail – were designed by Stroik and built by Talleres de Arte Granda of Madrid, Spain. Eppink of California, South Gate, CA, supplied the mahogany ambo.

Art for the chapel includes five murals (approximately 5 x 7-ft. each), as well as four circular pendentive murals of the evangelists (approximately 5 ft. in dia). All were painted by EverGreene artists. The 5x7-ft. murals were based on historic paintings: "The Annunciation with God the Father," by Jacopo Palma il Giovane (1548-1628); "The Baptism of Jesus by John the Baptist," painted in 1698 by Carlo Maratta; "The Temptation of St. Thomas Aquinas" by Diego Velazquez (1599-1660); "Teresa of Avila Receiving the Communion," painted in 1683 by LivioMehus; and "Abraham's Sacrifice of Isaac," painted in 1636 by Rembrandt van Rijn.

EverGreene also created all of the plasterwork for the chapel, including the capitals, arches and entablature. "All of the decoration is marbleized to look like the marble columns," says Jeff Greene, president of EverGreene Architectural Arts. "There are not a lot of elements in the chapel, but they are all very finely wrought," he notes. "Nothing is ostentatious; it all fits and works together. We had a lot of conversations during the work on the chapel about why the Classical formula works to create a holy space."

In addition to the bas relief over the entry doors, EverGreene artists also sculpted and cast the approximately 4½-ft tall statue of "Our Lady Seat of Wisdom" and the two angels flanking her, for the interior. "This statue of Mary reflects a particular moment, of letting her child go," says Greene. "It is very moving. We paid a lot of attention to the details, the facial expression, and the depth of the drapes."

The EverGreene designer for the ornament detail was Eugene Nikitin and the lead sculptors were Penko Platikanov and Javlon Yarmuhamedov, along with about 10 others. Luis Angarita was the project manager and Nick Serafimov and Johnny Hilares were site foremen.

"The iconography for the chapel was fairly simple," says Stroik. "The college didn't want a lot of ornament, color or statuary. They wanted it in small doses and well done."

The marble work for the chapel was supplied by Savema, SPA, Italy, and installed by Cleveland Marble of Orange, CA. This included the columns, pilasters and the flooring. The columns on either side of the nave are one-piece construction and are made of Botticino marble and the bases are

**Proposed by Stroik and sculpted by EverGreene Architectural Arts, the bas relief, "The Coronation of the Virgin Mary," is over the bronze entry doors. It is approximately 3 ft. tall x 7 ft. wide.** Photo: Thomas Aquinas College

Apuano marble. They were quarried in 16-ft. blocks in Italy and transported to Pietrasanta, near Carrara – the center of the world's stone fabrication industry, notes Randy Fulton, project manager for Stegmann and Kastner, project management consultant for the college.

The general contractor for the project was HMH Construction of Ventura, CA. Fine Line Precast of Ventura, CA, supplied the precast details, including the mezzanine balustrade, exterior balustrade and pavilion door surrounds.

The chapel was designed to give the appearance that the columns were holding up the building, but that type of construction doesn't work in today's earthquake-concerned environment. "The columns had to be bored out in the center to accommodate the steel columns," says DeLuca. "The marble columns were then installed over the steel columns during construction, when only the lower walls were in place. They were lifted over the wall with a giant crane and lowered over the steel columns. Then large protective structures were built around them to protect them during the rest of the construction."

"Those are the only steel columns in the building," Stroik points out. "The building is primarily masonry construction." He adds that marble was selected for its coloring after careful consideration. "Originally the interior columns were going to be limestone, but Dr. Dillon did not think limestone was the right color for the interior. The marble has a warmer appearance. Above the columns, we had EverGreene make the capitals, entablature and arches in plaster that is faux painted to match the Apuano marble bases. This is actually very traditional in the U.S. and Europe," he adds, "and there were generous savings."

The columns for the baldacchino were also a consideration. Although the college originally wanted bronze columns, it was thought that they would be too expensive. Fulton did some studies and found that Arte Grande could produce the bronze Solomonic columns at a price similar to marble, so they went ahead with the bronze.

The baldacchino also features four angels, one on each corner (two with bunches of grapes and two with sheaves of wheat), with a painted and gilded wood canopy.

Another firm involved in the project was Boston Valley Terra Cotta; it supplied the custom tile for the exterior of the umbrella dome; the red clay tile for the rest of the building was supplied by MCA of Corona, CA. The dome is divided into 12 sections with 12 round oculi, signifying the 12 apostles.

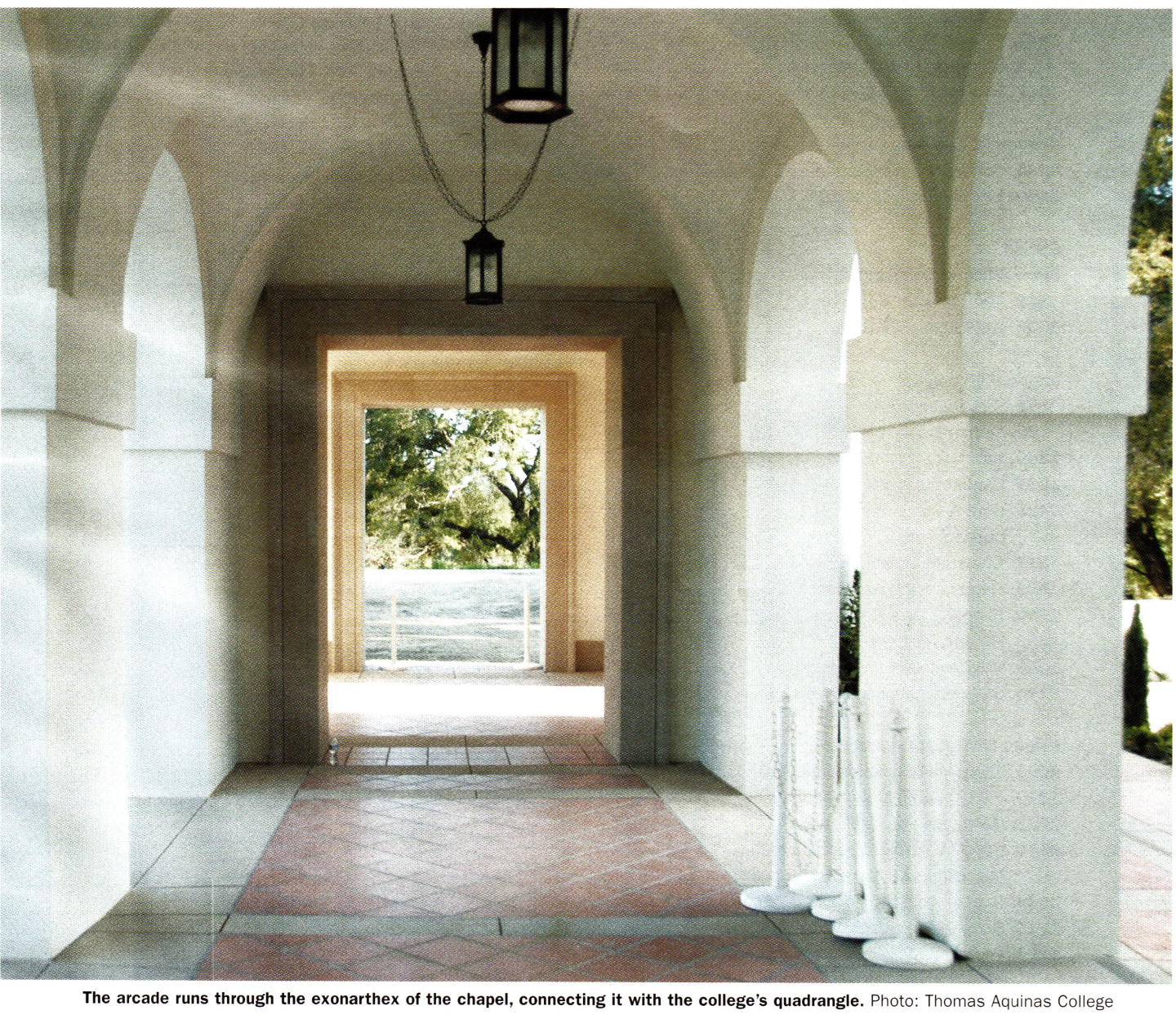
Other clerestory windows throughout the chapel provide most of the lighting. Other than that, the chapel has subtle uplighting and a few spots. The lighting consultant was George Sexton Associates of Washington, DC. There are no chandeliers and no windows to look out of.

Heating and cooling are also subtle. "Because of the insulation, very little air conditioning is needed," says DeLuca. Heating and cooling is achieved via hot-water radiant heating under the floor that is controlled by a sophisticated computer system. "It is simple and quiet," says Stroik.

Wood pews (supplied by New Holland Church Furniture, New Holland, PA, in the transept and nave seat 375 (450 including the loft) at the new chapel at Thomas Aquinas College; with additional folding chairs, the chapel can seat 700. Dedicated in March of this year, the chapel quickly became the center of the college. "It is almost always in use," says DeLuca, "either for services or for contemplation." – *Martha McDonald*

**Web Extra: Additional photos can be seen at www.traditional-building.com/extras/Dec09Aquinas.htm.**

**One of five murals painted by EverGreene Architectural Arts for the chapel, this is based on "The Temptation of St. Thomas Aquinas" by Velazquez.** Photo: Stephen Schafer, Schaf Photo Studios



**The arcade runs through the exonarthex of the chapel, connecting it with the college's quadrangle.** Photo: Thomas Aquinas College

**Manufactured primarily of aluminum by Munns Manufacturing, the bell tower holds three bells that are hand rung.** Photo: Munns Manufacturing

# Sourcelists Religious Buildings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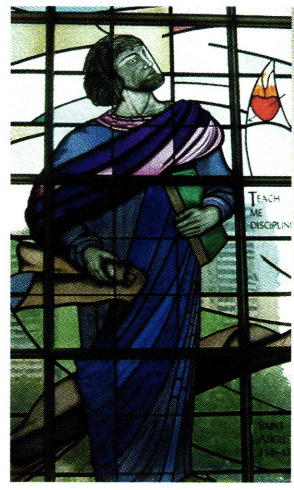

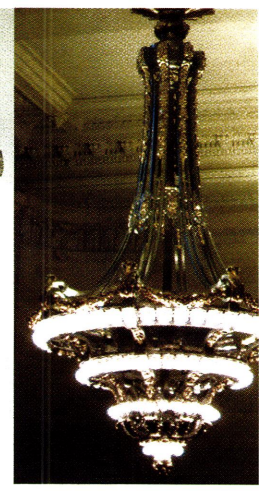

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**Contact for more information.*

# Historical Products Showcase

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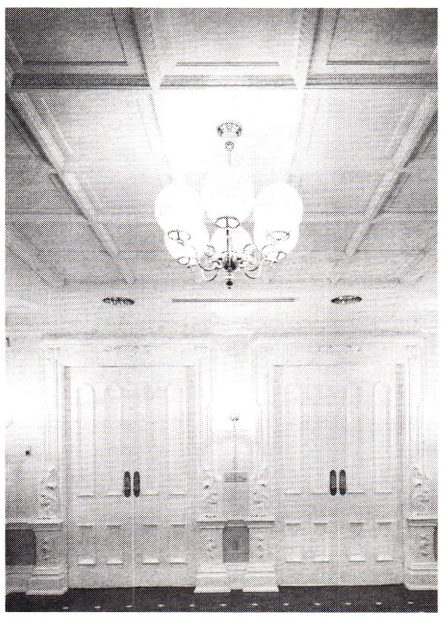
### Above View by Tiles, Inc.
414-744-7118; Fax: 414-744-7119
www.aboveview.com
Milwaukee, WI 53221

Supplier of suspended plaster ceiling tile & exotic wall panels: gypsum & other non-combustible aggregates.

**Key in No. 1537**



*Above View by Tiles supplied the ornamental plaster ceiling for the historic Matthew Keenan Building in Milwaukee, WI.*

### American Restoration Tile, Inc.
501-455-1000; Fax: 501-455-1004
www.restorationtile.com
Mabelvale, AR 72103

Custom manufacturer of historical tile: for fireplaces, flooring, kitchens, baths & custom mosaics; restoration & new construction; custom matching of glazed & unglazed tile.

**Key in No. 8032**

*American Restoration Tile manufactured this 1-in. hexagonal, unglazed porcelain flooring tile.*

### Architectural Grille
800-387-6267; Fax: 718-832-1390
www.archgrille.com
Brooklyn, NY 11215

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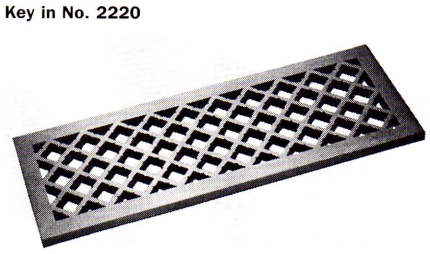

*Custom-perforated and linear-bar grilles from Architectural Grille are available in thicknesses ranging from ¼ to 1 in.*

### Ball Consulting, Ltd.
724-266-1502; Fax: 724-266-1504
www.ball-consulting-ltd.com
Ambridge, PA 15003

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**Key in No. 7260**

*Exterior architectural ornamentation is the specialty of Ball Consulting.*

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New Orleans, LA 70130

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**Key in No. 166**

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### Chelsea Decorative Metal Co.
713-721-9200; Fax: 713-776-8661
www.thetinman.com
Houston, TX 77074

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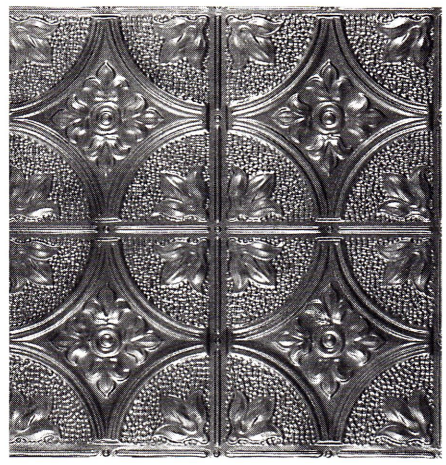
**Key in No. 190**



*Chelsea Decorative Metal manufactured this 12-in. multiple-plate design, model #12-09, which is ideal for large rooms.*

### Construction Tie Products
219-878-1427; Fax: 219-874-3626
www.ctpanchors.com
Michigan City, IN 46360

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**Key in No. 1955**

*The CTP 6000-2 Series Stone-Grip anchor with CTP Grip-Max from Construction Tie Products restrains existing stone and precast panels.*

### Custom Shutter Company
800-470-0685; Fax: 251-545-4120
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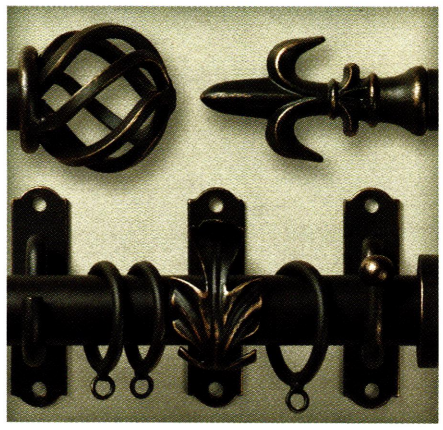
www.gabys.com
Dallas, TX 75207

Manufacturer of handcrafted decorative iron drapery hardware: for curved & angled bay windows & arches; 30 standard finishes; more than 100 finial options.

**Key in No. 2520**



*Gaby's Shoppe offers a selection of drapery hardware designs in six powder-coated finishes.*

### Hugh Lofting Timber Framing, Inc.
610-444-5382; Fax: 610-444-2371
www.hughloftingtimberframe.com
West Grove, PA 19390

Designer, fabricator & installer of custom timber-frame structures: residential, commercial & outbuildings; insulated panel systems; throughout the mid-Atlantic region; eco-friendly construction & materials.

**Key in No. 663**

*This detail shows the timber-framing skills of the artisans at Hugh Lofting Timber Framing.*

### Jack Arnold - European Copper

800-391-0014; Fax: 918-494-0884
www.jackarnold.com
Tulsa, OK 74133

Manufacturer of custom copper chimney pots: 3 styles & 7 sizes; patina finish; UL listed; for masonry & pre-engineered fireplace systems.

**Key in No. 1983**

*The Bishop is one of many copper chimney pots offered by Jack Arnold - European Copper.*

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Elkhart Lake, WI 53020

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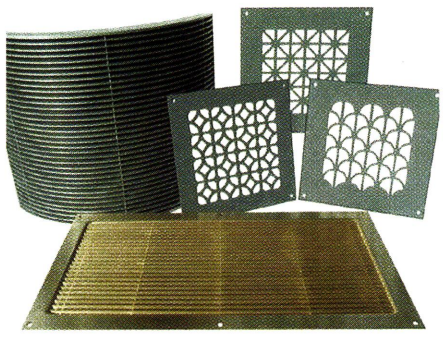

*Kees offers a selection of architectural stamped and bar grilles in historic styles.*

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717-272-3744; Fax: 717-272-5147
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Lebanon, PA 17042

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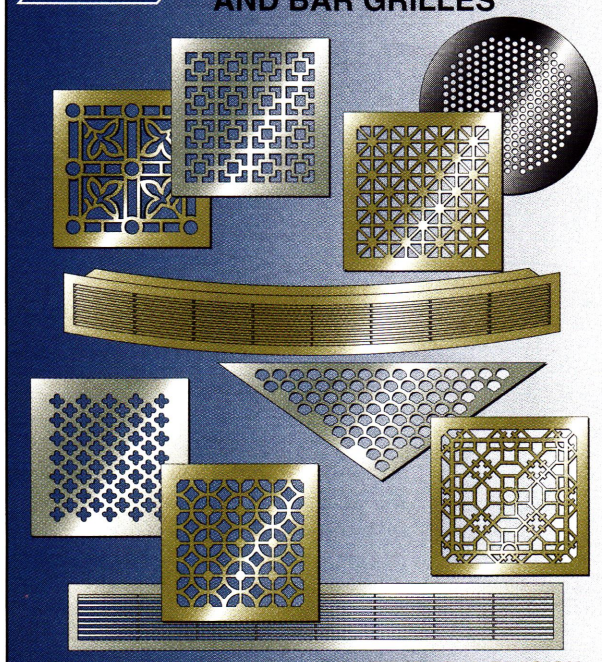

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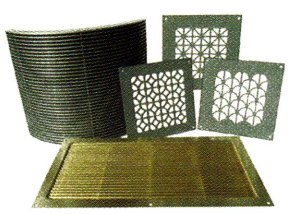

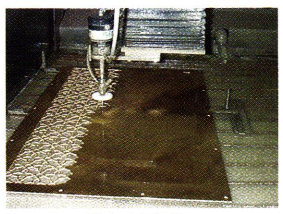

Waterjet Cutting

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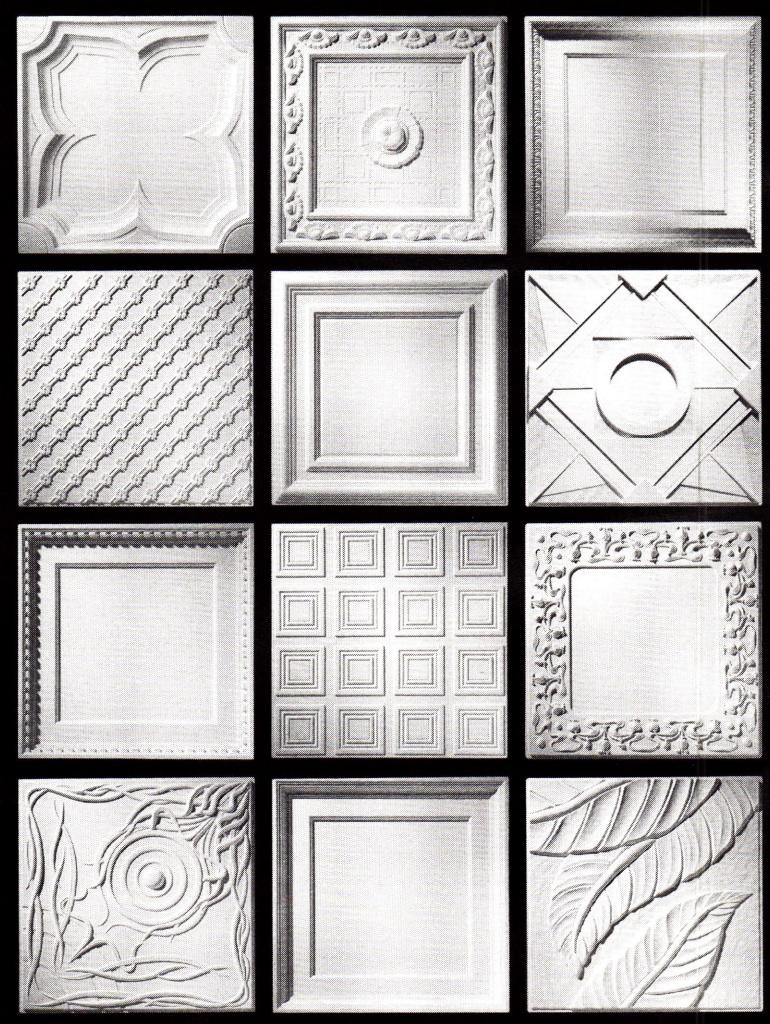

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WWW. ABOVEVIEW.COM

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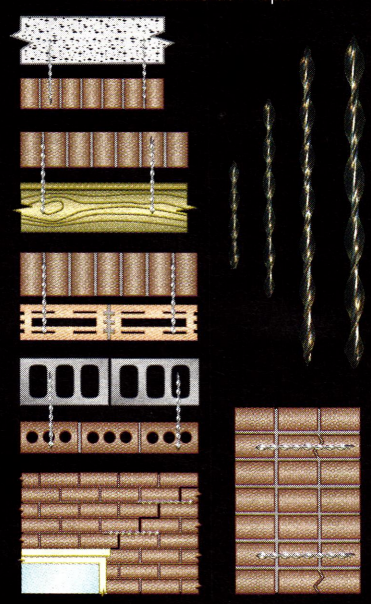

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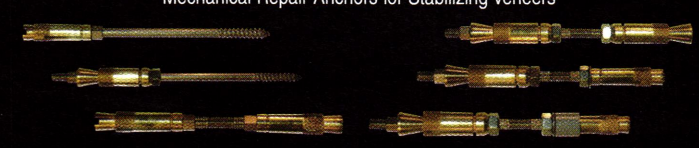
CTP Grip-Tie
Mechanical Repair Anchors for Stabilizing Veneers



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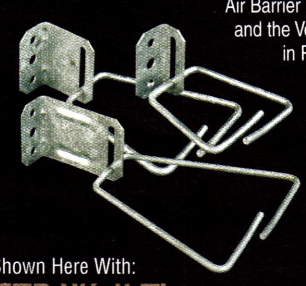

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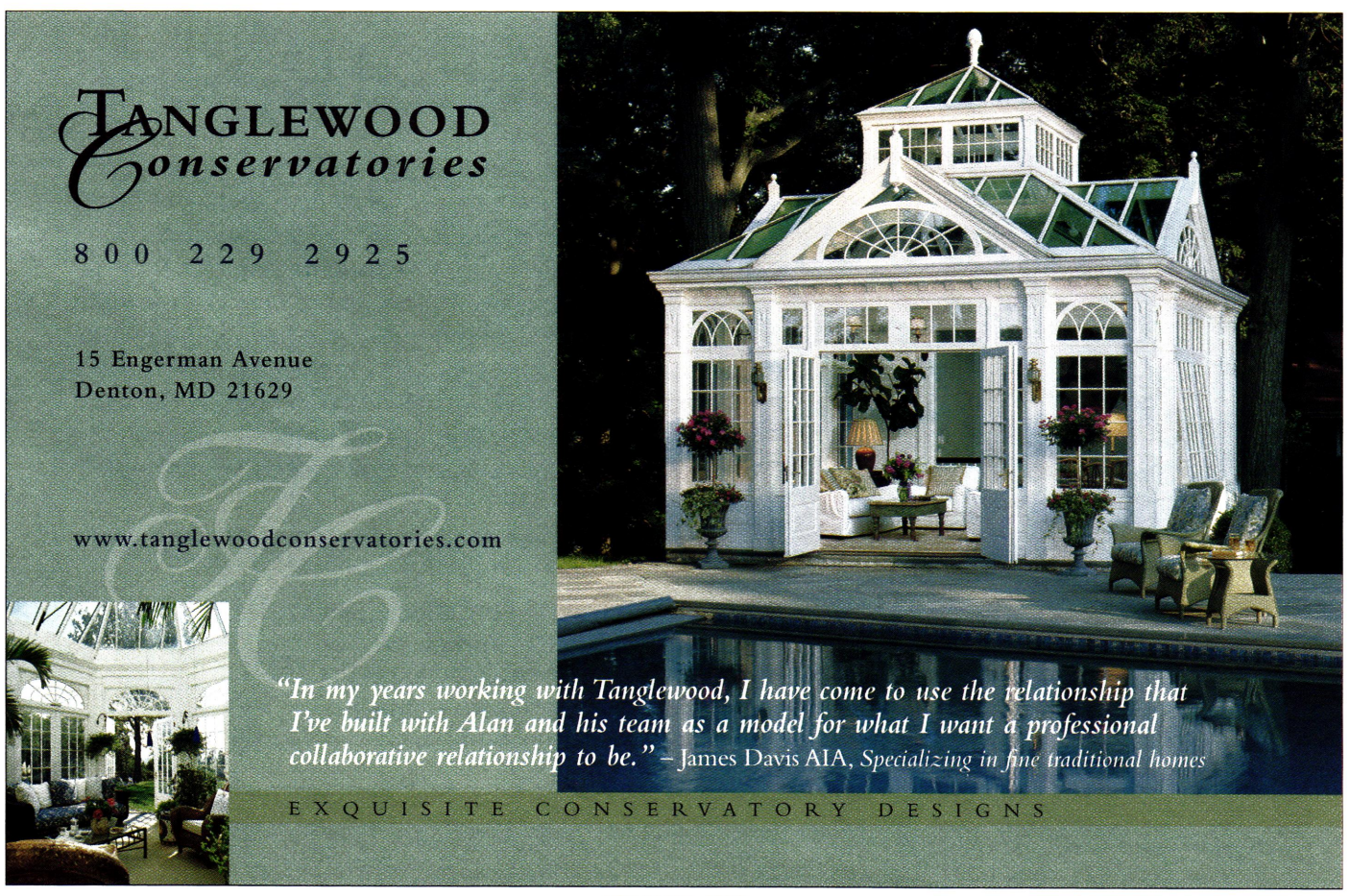



*"In my years working with Tanglewood, I have come to use the relationship that I've built with Alan and his team as a model for what I want a professional collaborative relationship to be."* – James Davis AIA, *Specializing in fine traditional homes*

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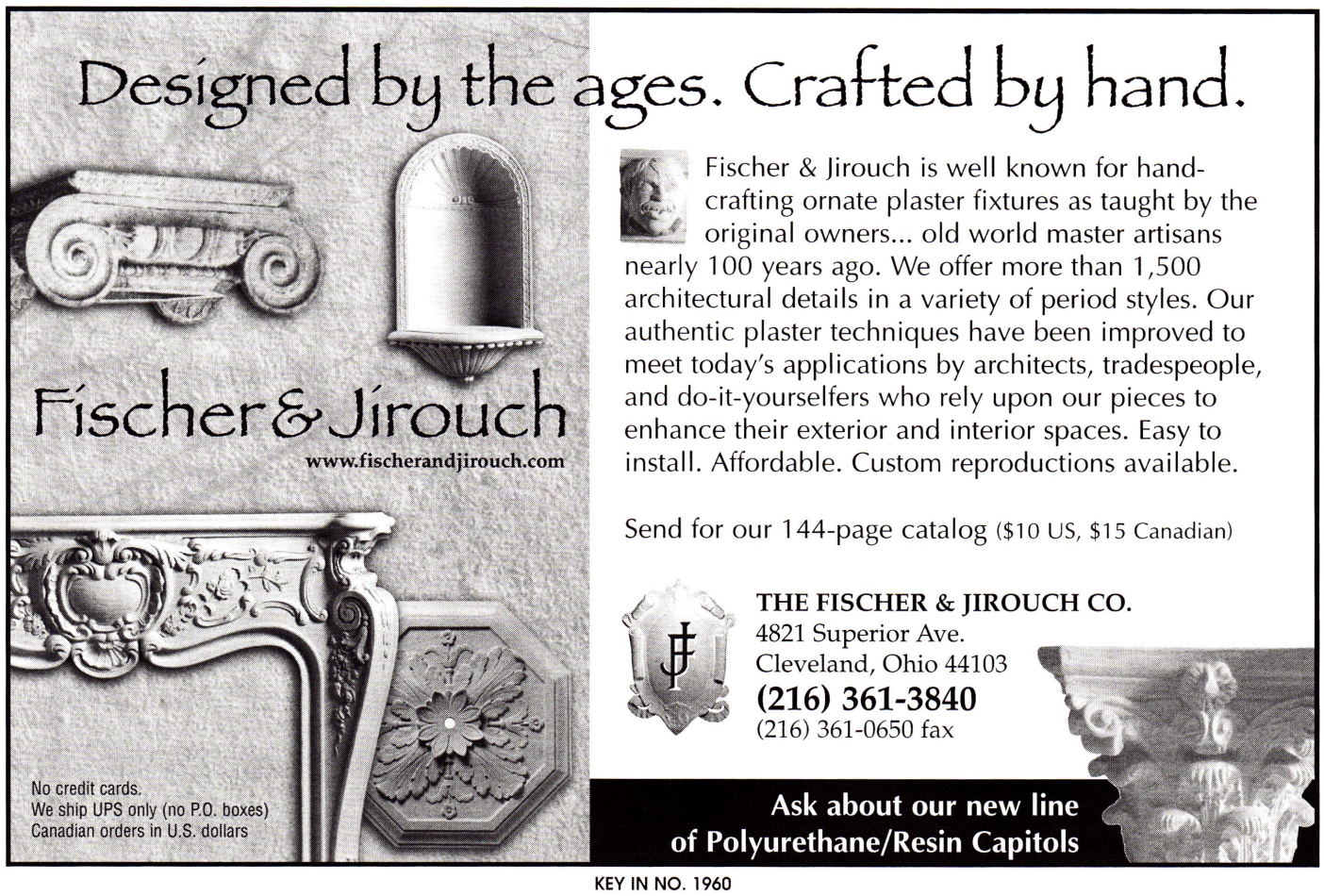


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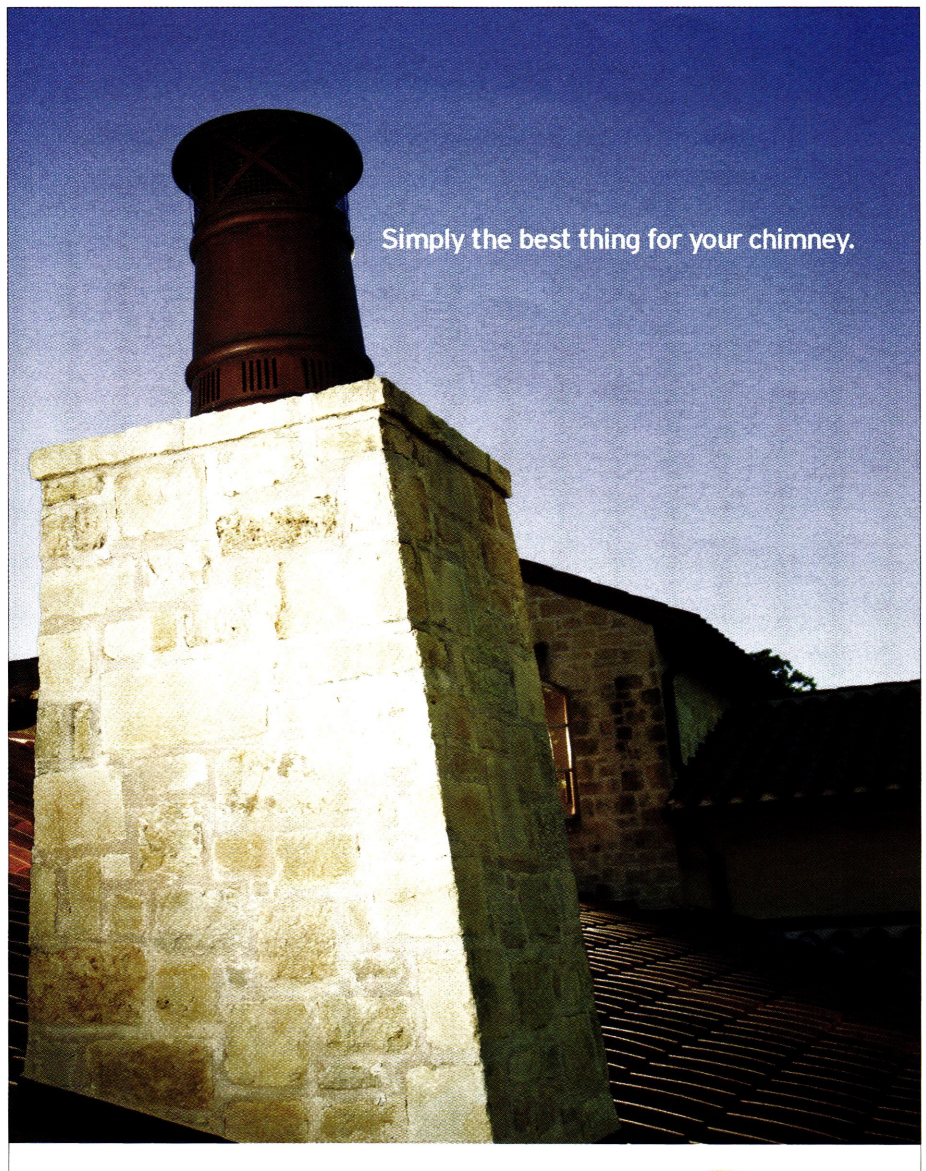


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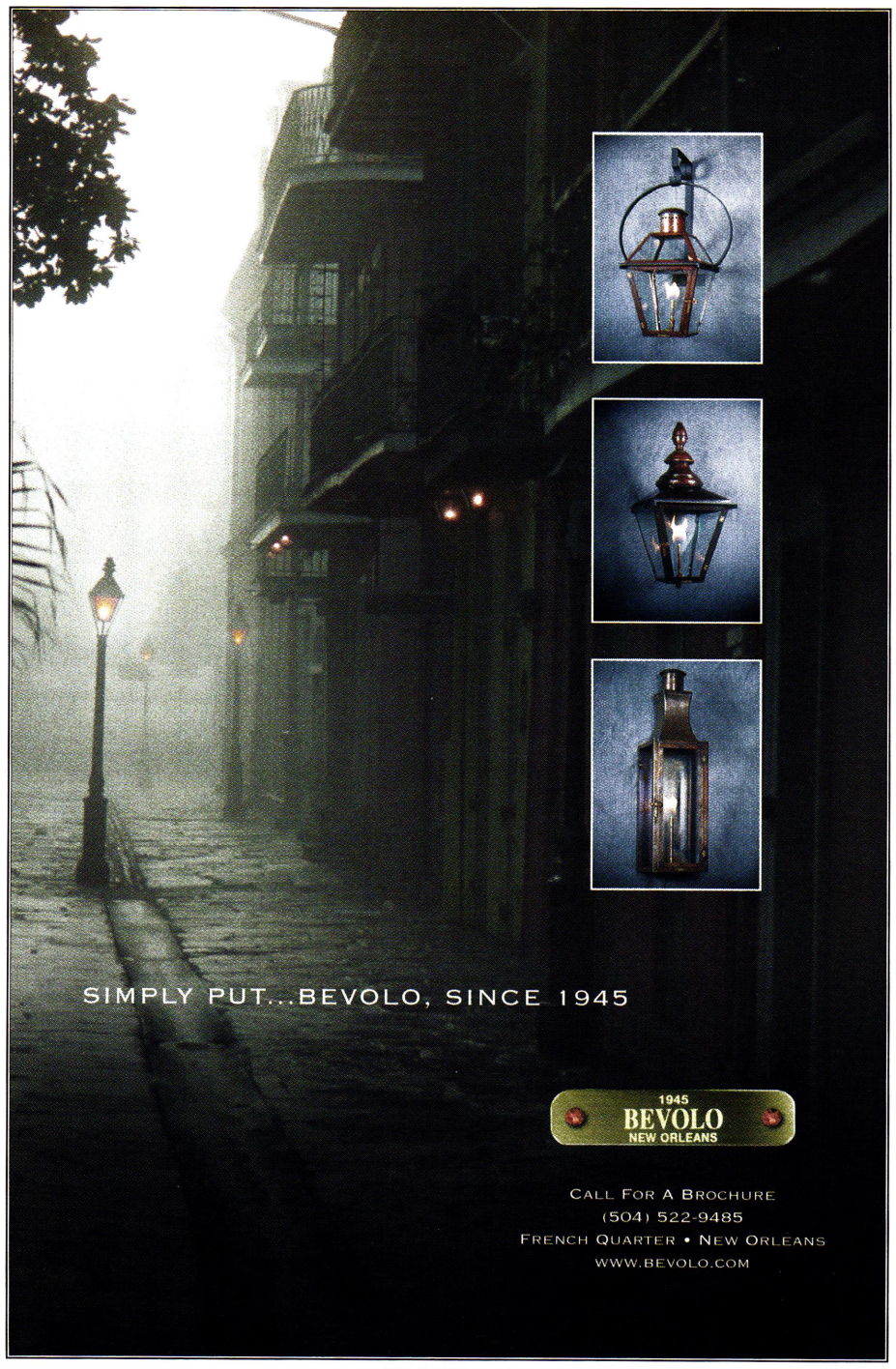


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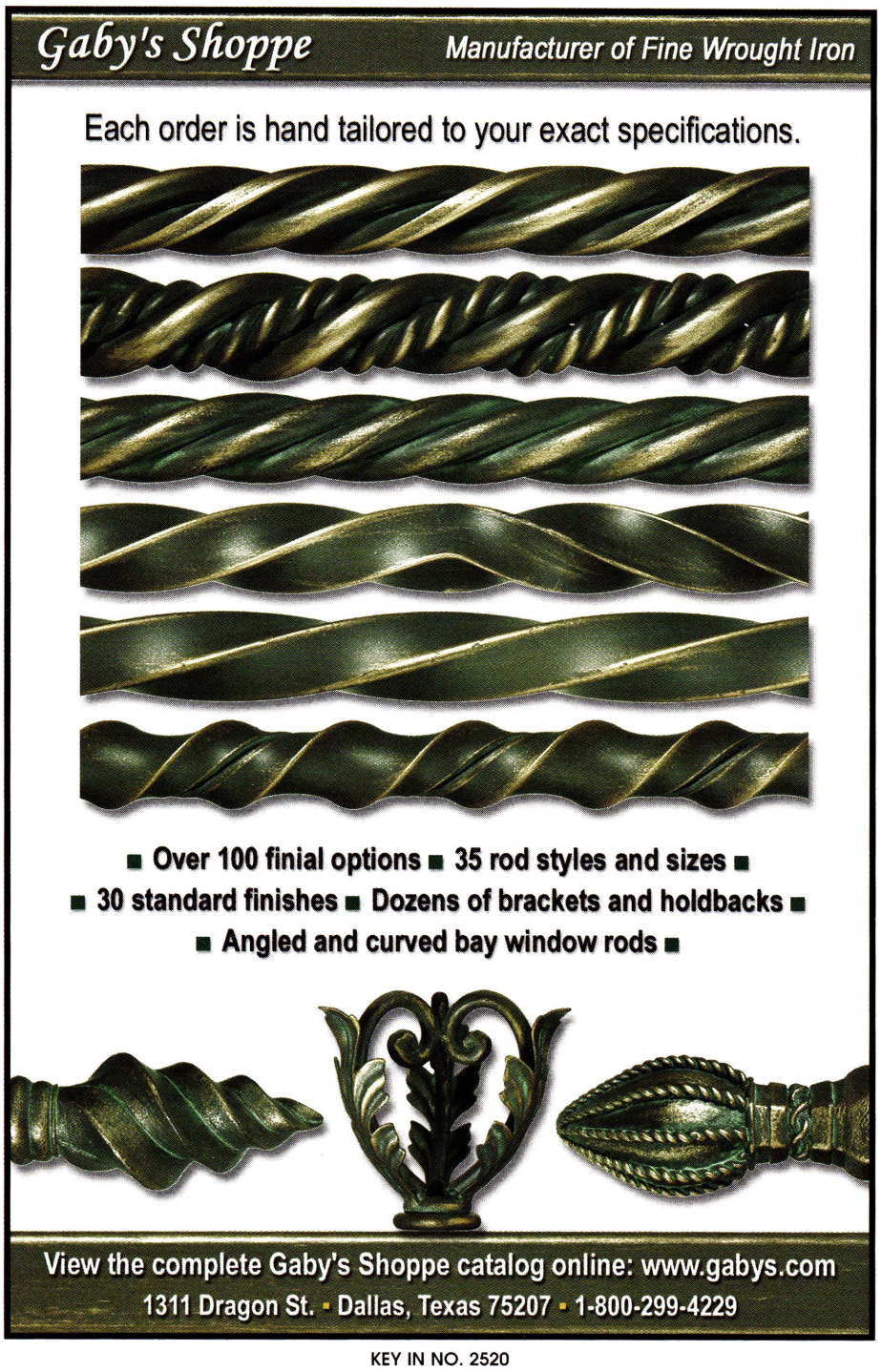
*The internet marketplace for historical products & services*

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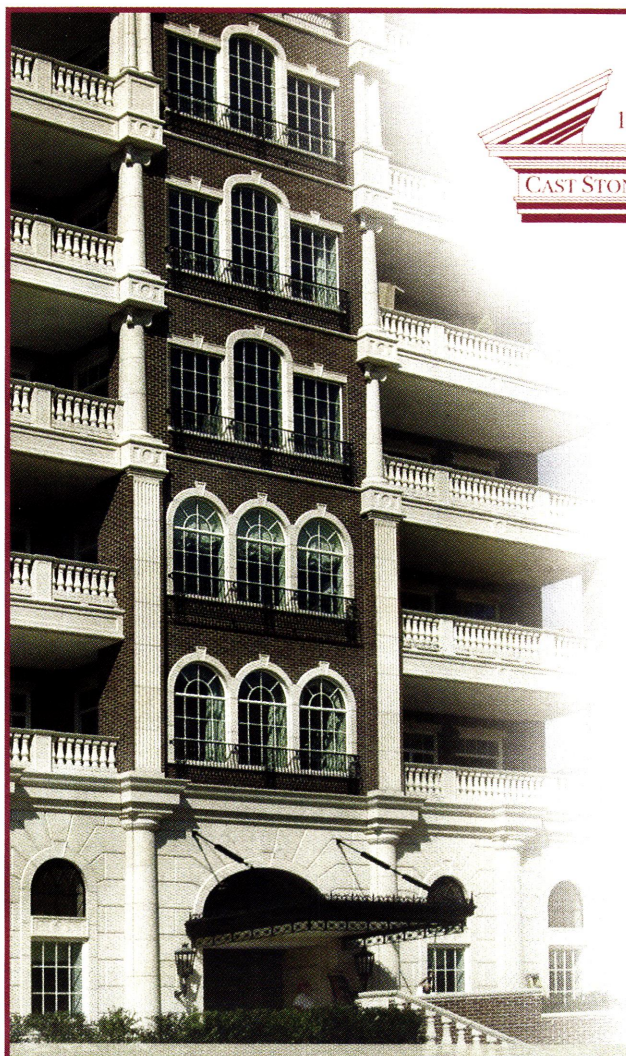

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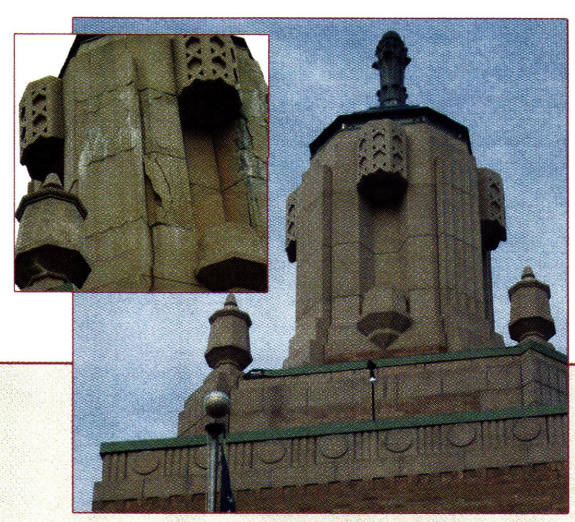

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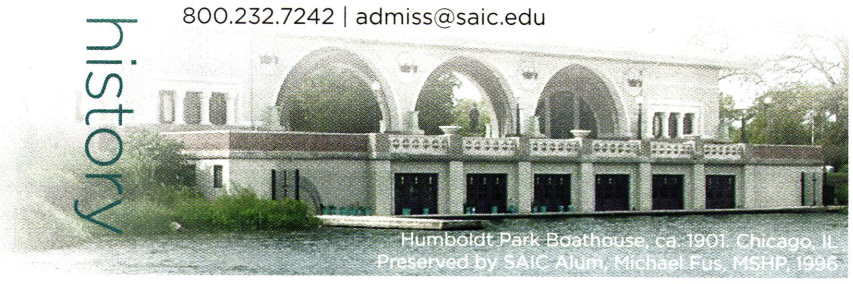
Humboldt Park Boathouse, ca. 1901. Chicago, IL
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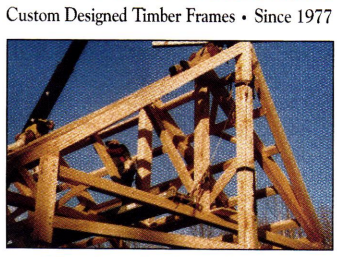

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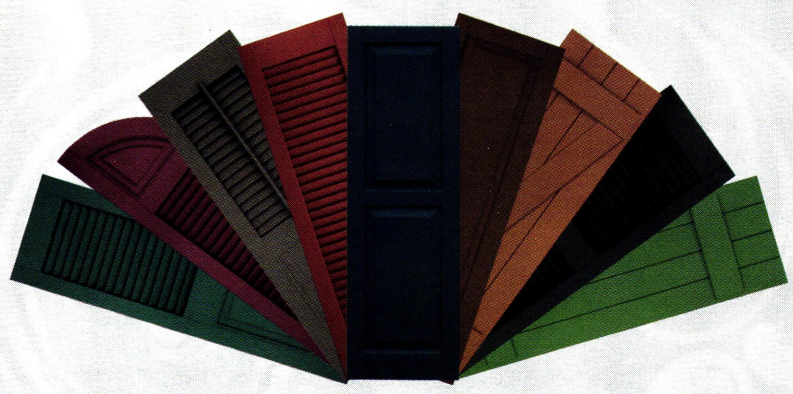

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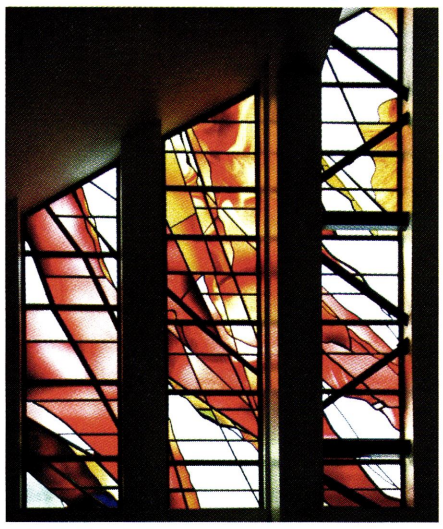
Manufacturer of 65,000+ decorative building products: architectural moldings & millwork, columns, capitals, wrought-iron components, balustrading, door hardware, lighting, ceiling tile, furniture & cabinet components & more.

**Key in No. 1088**

### Bendheim
800-221-7379; Fax: 973-471-1640
www.restorationglass.com
Passaic, NJ 07055

Supplier of mouth-blown restoration glass: found in restorations such as the White House, Mount Vernon & Monticello; 2 levels of distortion, full & light, suitable for different time periods.

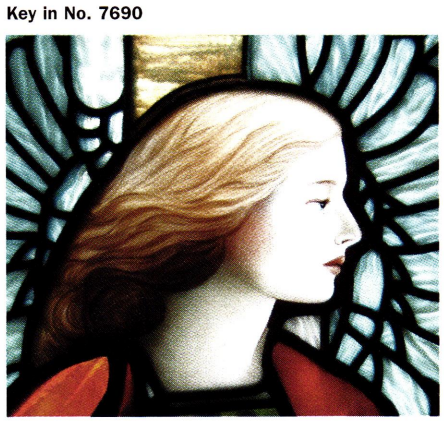


*This window from Saint Mary's Church in Portland, CT, was designed by Ellen Miret using Bendheim's mouth-blown Lamberts art glass.*

### Bovard Studio, Inc.
641-472-2824; Fax: 641-472-0974
www.bovardstudio.com
Fairfield, IA 52556

Restorer, designer & fabricator of stained-glass windows: wood, aluminum & steel frames; protective glazing systems; replicates lost stained-glass windows; faceted glass; mosaics; hand-painted kiln-fired original art glass.

**Key in No. 7690**



*This Tiffany-style stained-glass window at the First Congregational Church in Kenosha, WI, was created by Bovard Studio.*

### Canning Studios
203-272-9868; Fax: 203-272-9879
www.canning-studios.com
Cheshire, CT 06410

Restorer & designer of decorative finishes, ornamental plaster & wood: historic-paint analysis; plaster consolidation & stabilization; decorative painting, murals, interior & exterior gilding & wood graining; metal & stone cleaning; art glass restoration.

**Key in No. 5100**

### Conrad Schmitt Studios, Inc.
800-969-3033; Fax: 262-786-9036
www.conradschmitt.com
New Berlin, WI 53151

Creator, conservator & restorer of decorative painting: stained & art glass; ornamental plasterwork; gilding; crystalline etched-glass designs; murals, mosaics & statuary; for public & religious buildings; since 1889.

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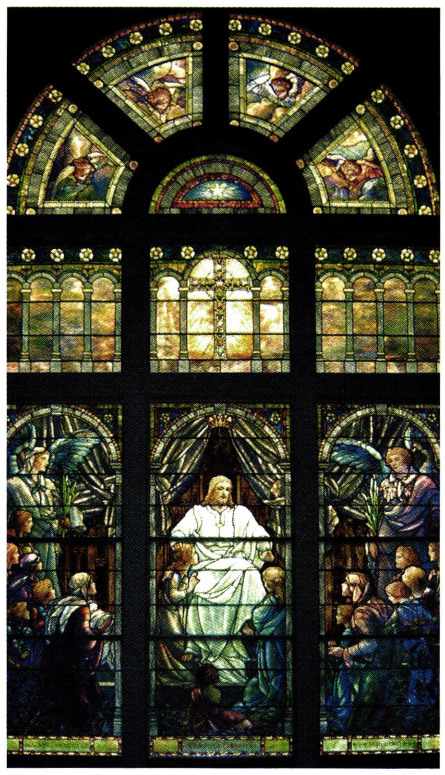

*Conrad Schmitt Studios conserved and re-leaded three large windows containing 62 panels of American Opalescent glass created by stained glass master, Louis C. Tiffany Studios for Broad Street Presbyterian Church in Columbus, OH; shown here after conservation is Christ Blessing the Little Children.*

### Eve Guinan Design - Restoration
416-469-8110; Fax: 416-469-2700
www.egdglass.com
Toronto, ON, Canada M4K 3B7

Designer, fabricator & restorer of stained glass: painted art glass, acid etching, silk screening, copper foil & glass bending; for ecclesiastical, commercial & residential use.

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*"St. Augustine" is one of three stained-glass panels created by Eve Guinan for St. Michael's College School in Toronto.*

### EverGreene Architectural Arts, Inc.
212-244-2800; Fax: 212-244-6204
www.evergreene.com
New York, NY 10001

Decorative-arts studio: murals, decorative painting, gilding, plaster, wood, metal, stone & mosaics; new design, conservation & restoration; ecclesiastical, institutional, public & commercial projects; offices in NYC & Chicago.

**Key in No. 2460**

### Glass Heritage, LLC
563-324-4300; Fax: 563-324-4321
www.glassheritage.com
Davenport, IA 52801

Art-glass studio: fabricator & restorer of stained glass & leaded glass; custom blown glass; sand blast etching; glass painting.

**Key in No. 1986**

*This stained-glass window depicting a Mid-summer Night's Dream was designed and fabricated by Glass Heritage.*

### John Tiedemann, Inc.
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www.johntiedemann.com
North Arlington, NJ 07031

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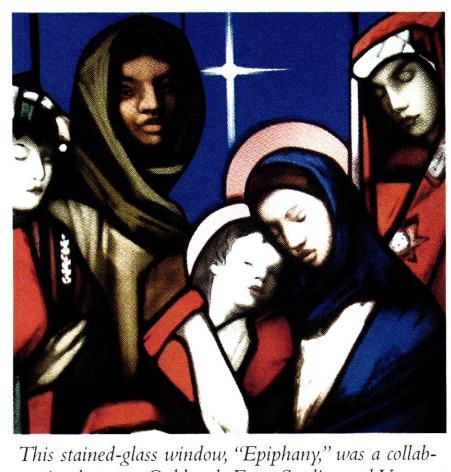

*This stained-glass window, "Epiphany," was a collaboration between Oakbrook Esser Studios and Vermont artist Janet McKenzie, whose oil paintings lend themselves to stained glass.*

### Oakbrook Esser Studios, Inc.
800-223-5193; Fax: 262-567-9310
www.oakbrookesser.com
Oconomowoc, WI 53066

Full-service stained-glass studio: historic restoration; new design; all styles & techniques; fabrication, installation & retrofitting; licensed Frank Lloyd Wright Art Glass collection; liturgical & public commissions.

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### Rohlf's Stained & Leaded Glass Studio
800-969-4106; Fax: 914-699-7091
www.rohlfstudio.com
Mount Vernon, NY 10550

Designer, fabricator & installer of new stained & leaded glass: restoration & replication; protective glazing; beveled, carved & fused/slumped glass; steel casement retrofitting; mosaics; established in 1920.

**Key in No. 6240**

*Rohlf's Stained & Leaded Glass Studio created this mosaic for the Westpine Study Center of Kirkwood, MO.*

### Stanton Glass Studio
800-619-4882; Fax: 254-829-2521
www.stantonglass.com
Waco, TX 76705

Designer & fabricator of custom glass: stained, leaded, beveled, etched & hand-painted; stained-glass restoration & conservation; commercial, church & residential applications.

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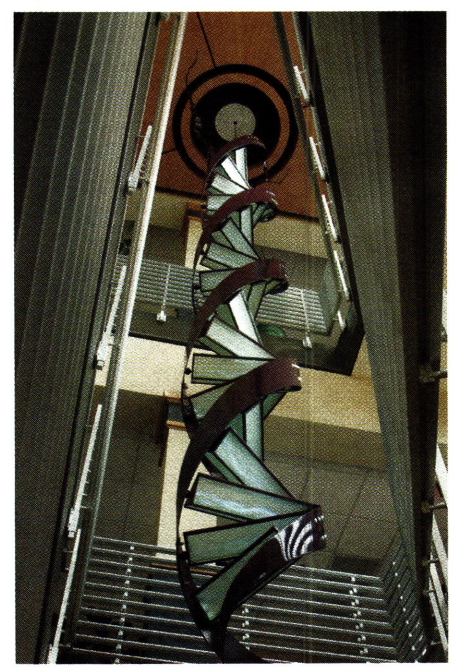

*This stained-glass installation in the new Science Building on the MCC campus was designed and fabricated by Stanton Glass.*

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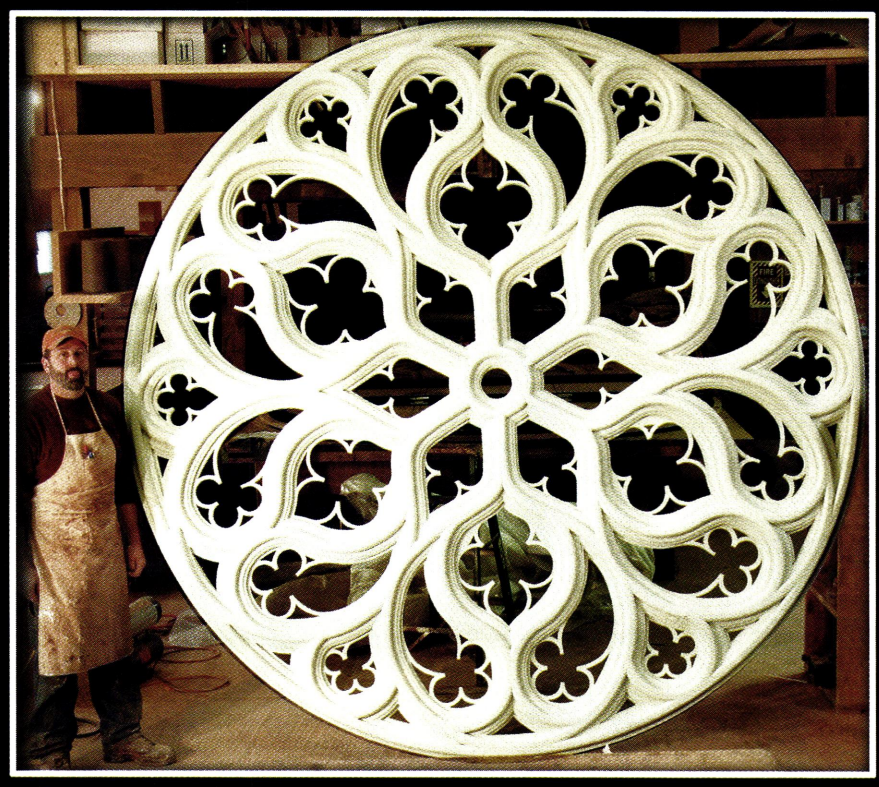
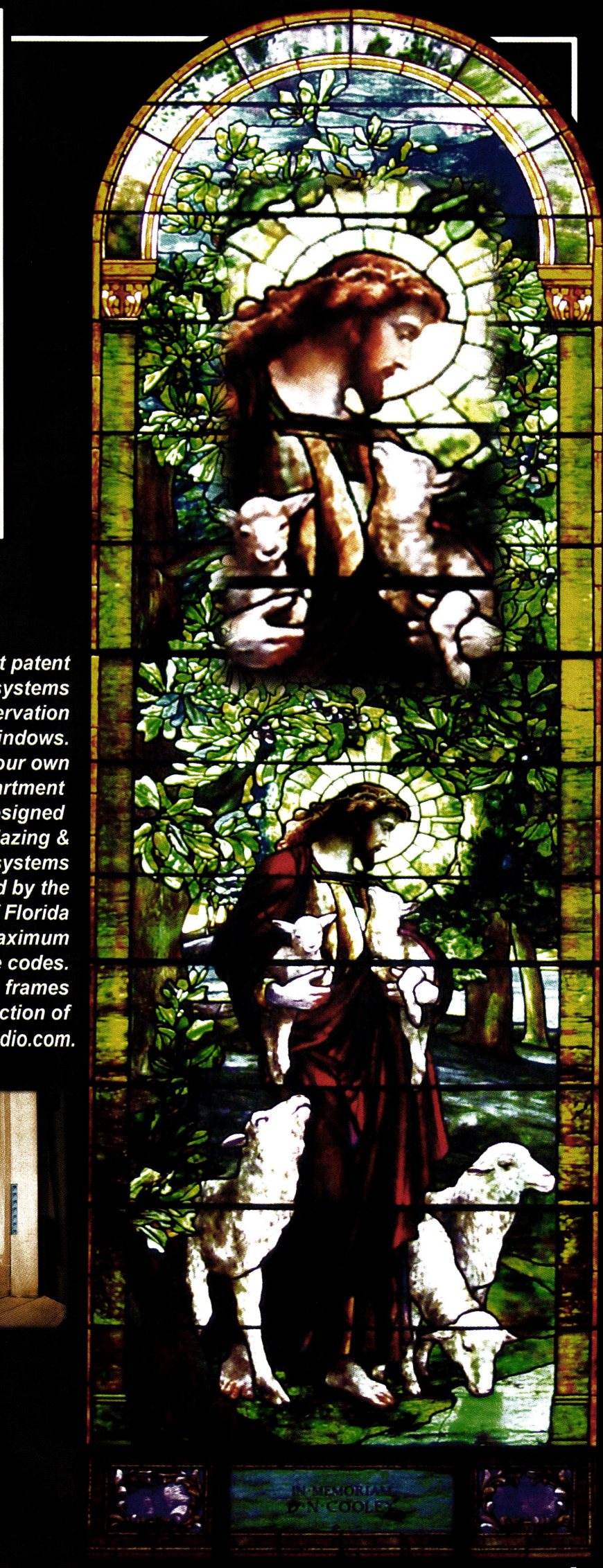
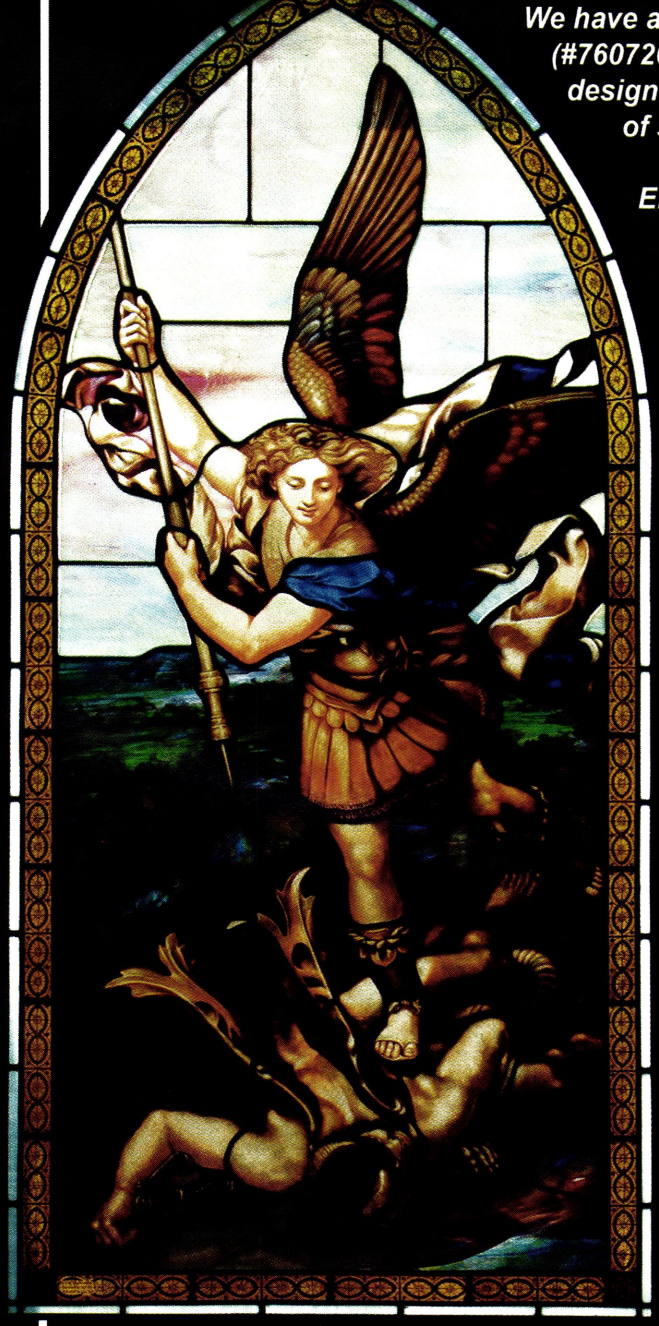


*Bovard Studio's Woodshop created this new rose window frame with plantation grown mahogany for the First Presbyterian Church in Fort Smith, Arkansas.*




*Louis Tiffany's "The Good Shepherd", exhibited at the 1893 World Columbian Exhibition. Tiffany's stained glass masterpiece was restored by Bovard Studio Inc. for St Luke's United Methodist Church in Dubuque, Iowa.*



*Example of a new historic style stained glass creation. This St. Michael the Archangel window was created by Bovard Studio for a private chapel in Wichita, Kansas.*

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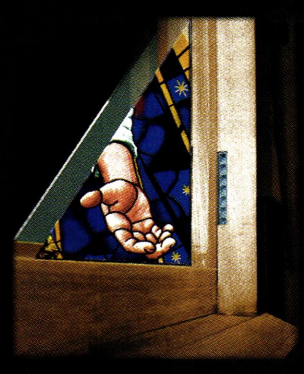

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**Tel: 641-472-2824 • Fax: 641-472-0974 • www.bovardstudio.com • email: info@bovardstudio.com**

*This is one of six windows created by Willet Hauser Architectural Glass, Inc. for the Armstrong Browning Library at Baylor University in Waco, TX.*

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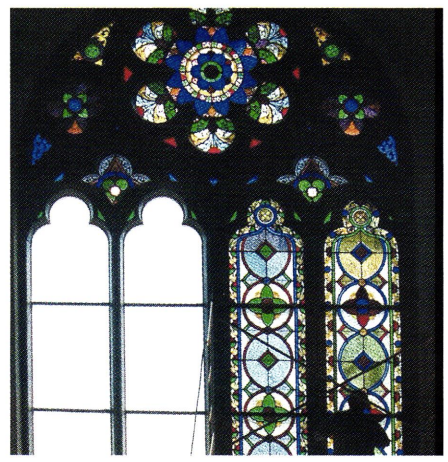
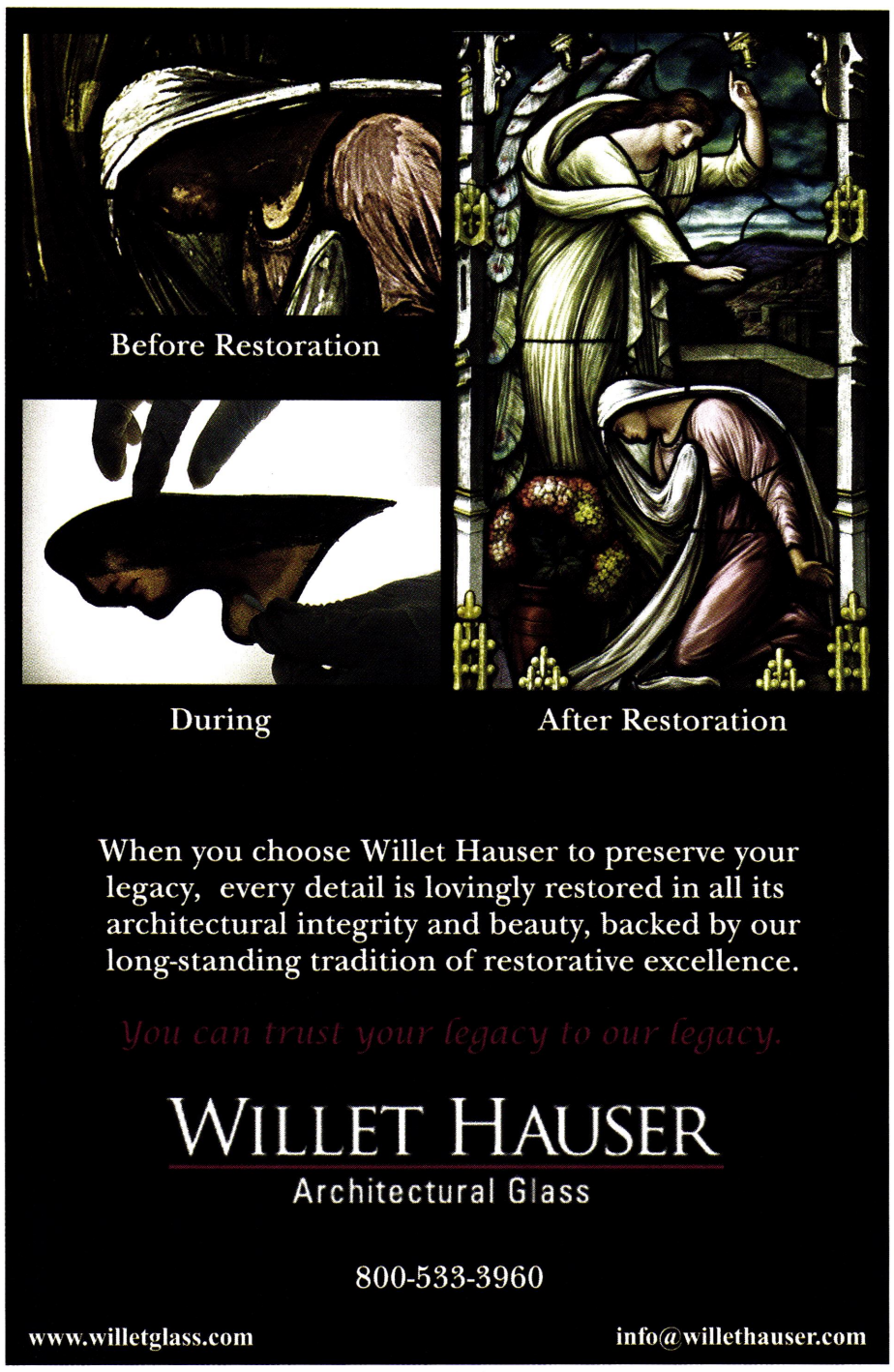


*Williams Stained Glass Studio repaired and cleaned the stained glass on this window.*

**Williams Stained Glass Studio**
412-344-0220; Fax: 412-344-0219
www.williamsstainedglass.com
Castle Shannon, PA 15234

Designer, fabricator & installer of custom art glass: residential, commercial & ecclesiastical applications; restoration services for historic stained glass; full-service studio.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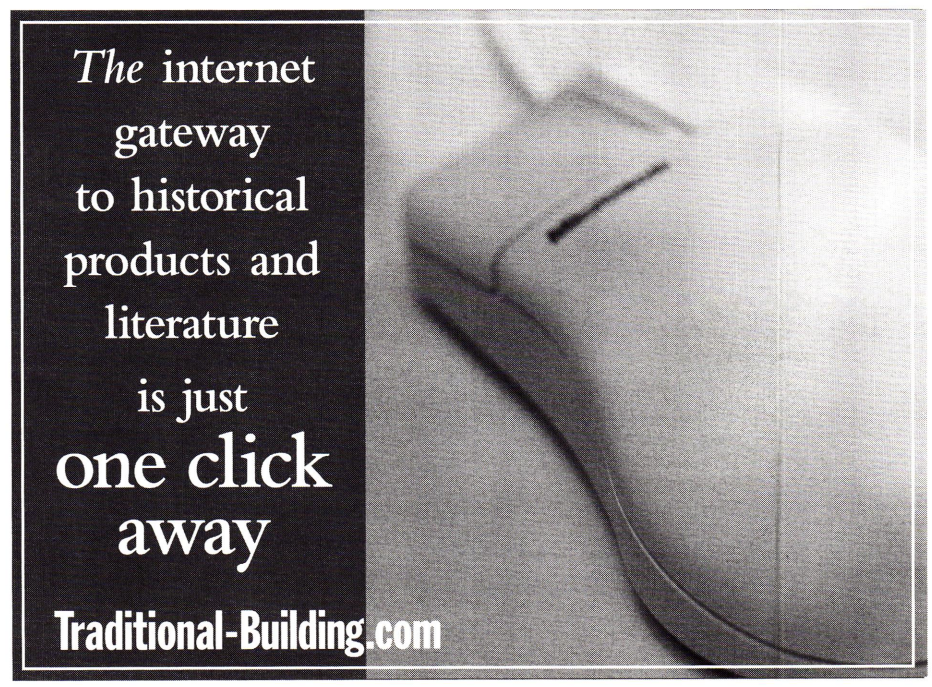

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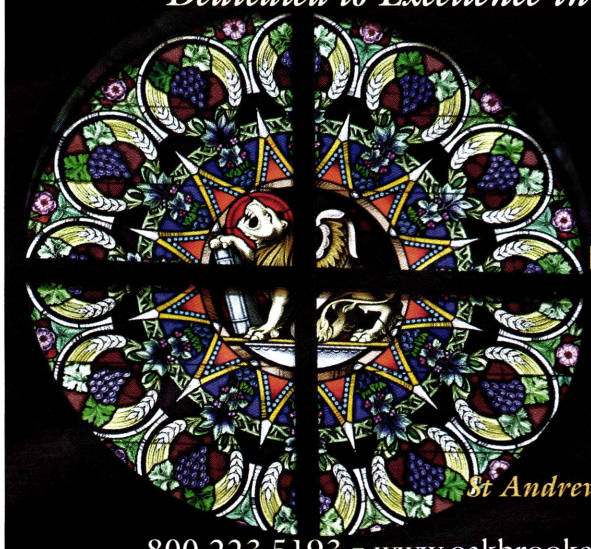

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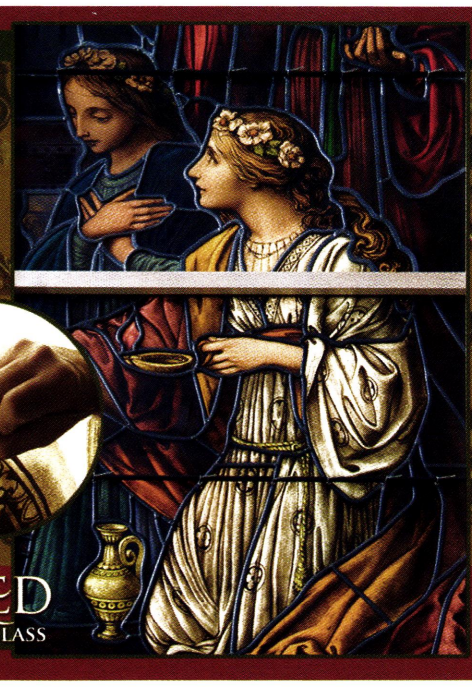
Ursuline Academy, part of a Leeds Green Building Project, brought to Stanton Glass Studio shoeboxes, not crates, filled with the shattered remains of a once majestic 1899 alter window by F. X. Zettler Co. of Munich, Germany. This panel is a small portion of the overall window, which measures 19′ tall.



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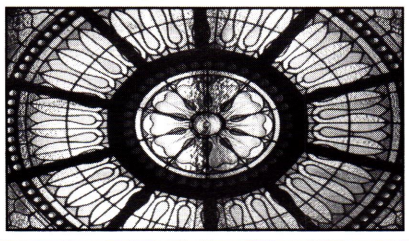


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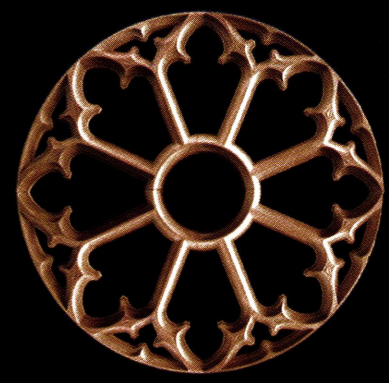

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**Bovard Studio, Inc.**
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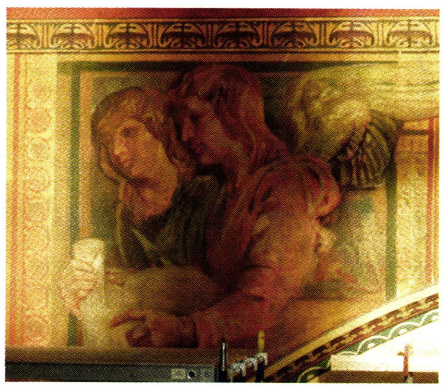
Fairfield, IA 52556

Restorer, designer & fabricator of stained-glass windows: wood, aluminum & steel frames; protective glazing systems; replicates lost stained-glass windows; faceted glass; mosaics; hand-painted kiln-fired original art glass.

**Key in No. 7690**

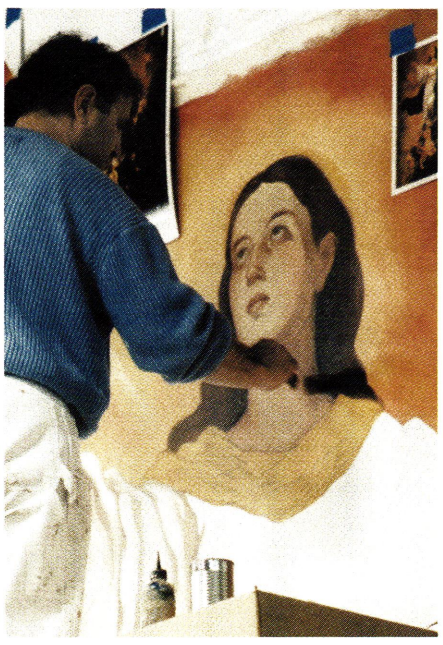


*A team from Canning Studios restored the murals and decorative paining at Trinity Church in Boston, MA.*

**Canning Studios**
203-272-9868; Fax: 203-272-9879
www.canning-studios.com
Cheshire, CT 06410

Restorer & designer of decorative finishes, ornamental plaster & wood: historic-paint analysis; plaster consolidation & stabilization; decorative painting, murals, interior & exterior gilding & wood graining; metal & stone cleaning; art glass restoration.

**Key in No. 5100**



*Conrad Schmitt Studios created the new apse mural and conserved the two flanking murals for the Cathedral of the Immaculate Conception, Memphis TN; Murillo's Assumption of the Virgin was the model for the new mural.*

**Conrad Schmitt Studios, Inc.**
800-969-3033; Fax: 262-786-9036
www.conradschmitt.com
New Berlin, WI 53151

Creator, conservator & restorer of decorative painting: stained & art glass; ornamental plasterwork; gilding; crystalline etched-glass designs; murals, mosaics & statuary; for public & religious buildings; since 1889.

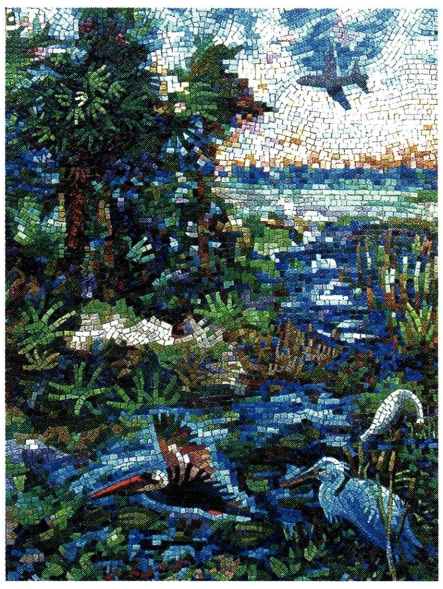
**Key in No. 1839 for ecclesiastical specialties; 8040 for interiors**

*EverGreene Architectural Arts painted this mural, "The Ascension of Christ," for the Baltimore Basilica.*

**EverGreene Architectural Arts, Inc.**
212-244-2800; Fax: 212-244-6204
www.evergreene.com
New York, NY 10001

Decorative-arts studio: murals, decorative painting, gilding, plaster, wood, metal, stone & mosaics; new design, conservation & restoration; ecclesiastical, institutional, public & commercial projects; offices in NYC & Chicago.

**Key in No. 2460**



*This wetlands/sunset panel is from "Coastal Reflections of Fort Walton Beach," a 4 ½ x 15 ft. panorama of Florida's topography, flora and fauna that was fabricated by Fishman Mosaics of glass smalti and split-faced stone.*

**Fishman Mosaics**
305-758-1141; Fax: Same as phone
www.georgefishmanmosaics.com
Miami Shores, FL 33138

Designer & fabricator of mosaics: traditional glass smalti & stone; pictorial mosaics in the Classical style; custom mosaic artwork for public spaces, hospitality & religious projects.

**John Tiedemann, Inc.**
877-600-2666; Fax: 201-991-3419
www.johntiedemann.com
North Arlington, NJ 07031

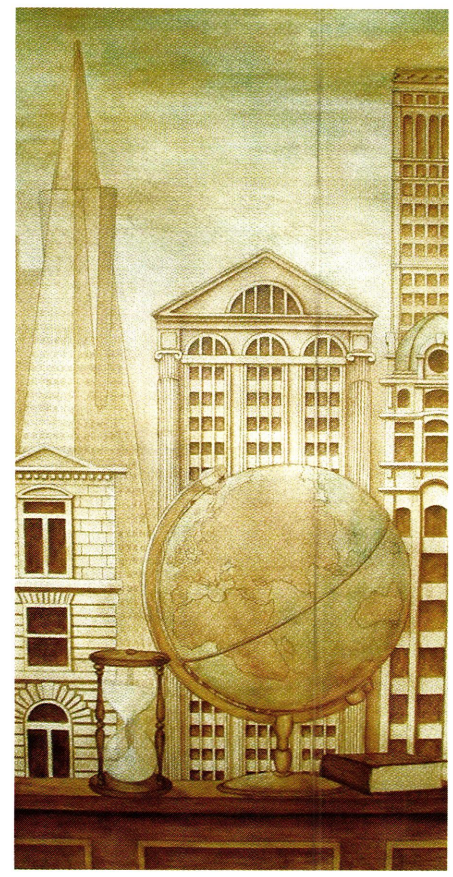
Restorer of interior elements: interior painting & design, liturgical renderings, decorative granite flooring, faux finishes, murals & frescoes, gilding, art glass, fine art, paint & plaster analysis, historic analysis & testing.

**Key in No. 1765**

*This mural was designed and painted by John Tiedemann, Inc.*

**Lynne Rutter Murals & Decorative Painting**
415-282-8820; No fax
www.lynnerutter.com
San Francisco, CA 94107

Creator of fine art murals: trompe l'oeil & wall & ceiling murals; painted onsite or on canvas to be installed anywhere; church work; works nationally & internationally.



*This fantasy cityscape in antique map colors, featuring San Francisco landmarks, was painted by Lynne Rutter.*

**Oakbrook Esser Studios, Inc.**
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www.oakbrookesser.com
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Full-service stained-glass studio: historic restoration; new design; all styles & techniques; fabrication, installation & retrofitting; licensed Frank Lloyd Wright Art Glass collection; liturgical & public commissions.

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**Key in No. 2674**

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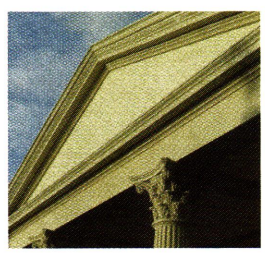

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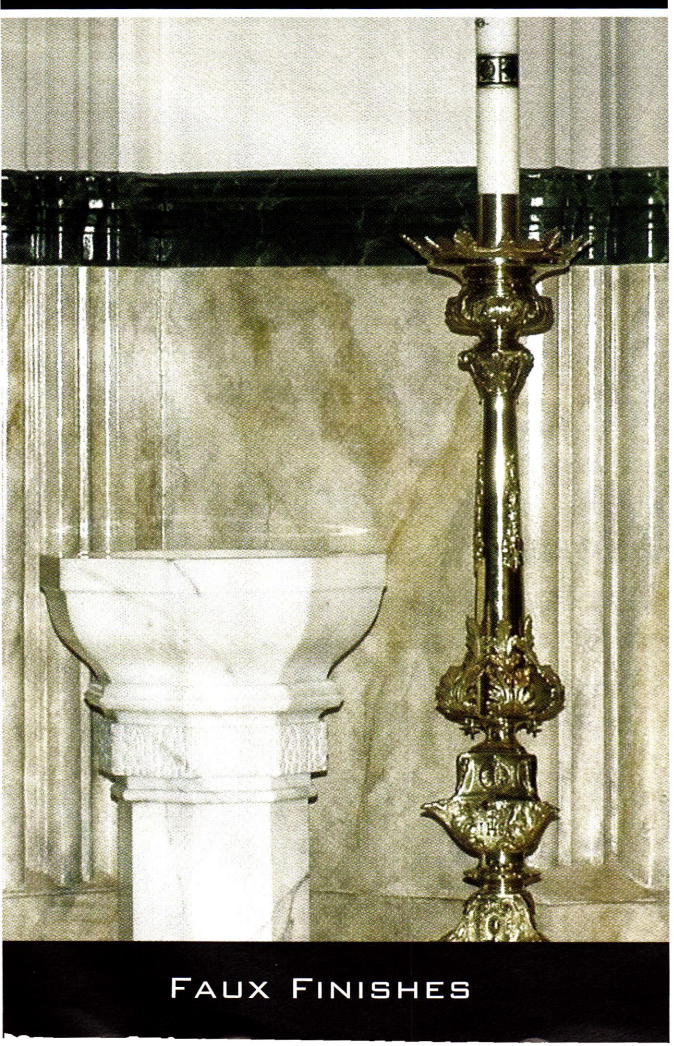

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# Got Questions?

Restoration detail, Rodeph Shalom Synagogue, Philadelphia, Pennsylvania

Everybody has questions – Why are we here? Can I get in trouble for this? Where are my keys? For those questions, you might want to look to a higher power. And there are people and places you can go to that can help you do just that. We know. We've preserved, restored, and built some of the best of them (see above).

Now, if you have questions about historic preservation, plaster, decorative painting, stone, wood, metal leafing you need look no further. We know this stuff inside and out (literally, inside and outside). We even know the questions you haven't thought of yet. And sometimes, those are the most important ones. Call us.

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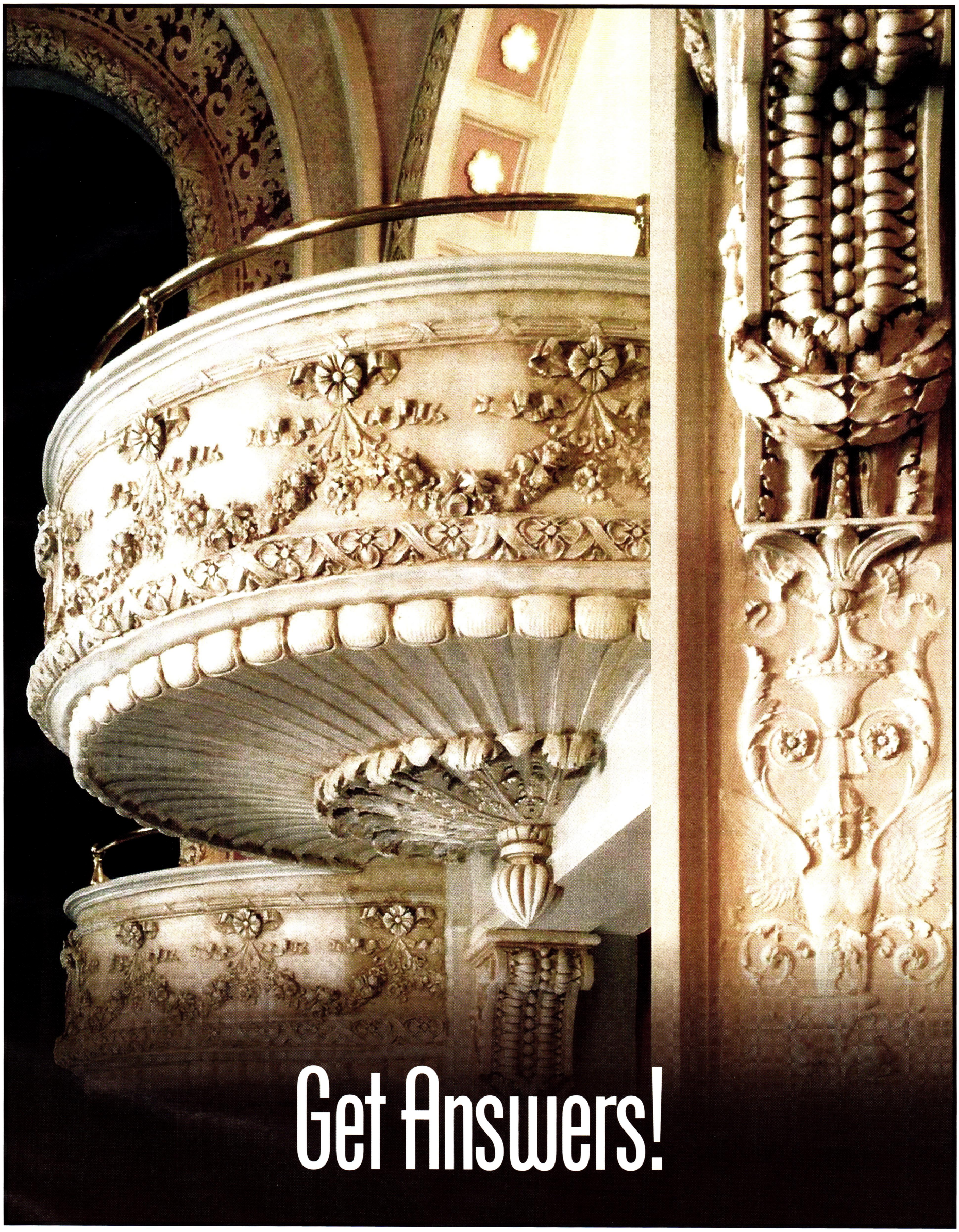


Decorative plaster restoration, Mahawie Theatre, Pittsfield, Massachusetts)

Everybody is looking for answers. But not all answers are created equal. Really. When you're looking for answers about historic preservation, plaster, decorative painting, stone, wood, metal leafing you need look no further. We know this stuff inside and out (literally, inside and outside).

We also have the skilled artisans and decades of hands-on experience needed to execute those answers. We even have answers for the questions you haven't thought of yet. And sometimes, those are the most important ones. Call us. See? Now you have the answer to who should you call?

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KEY IN NO. 5100

# Sculpture & Statuary

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*This bronze life-sized statue of the Holy Family was fabricated by Conrad Schmitt Studios for the Holy Family Church, Whitefish Bay, WI; it portrays a young Jesus seated upon the shoulders of Mary and Joseph.*

**Conrad Schmitt Studios, Inc.**
800-969-3033; Fax: 262-786-9036
www.conradschmitt.com
New Berlin, WI 53151

Creator, conservator & restorer of decorative painting: stained & art glass; ornamental plasterwork; gilding; crystalline etched-glass designs; murals, mosaics & statuary; for public & religious buildings; since 1889.

**Key in No. 1839 for ecclesiastical specialties; 8040 for interiors**

**Gerald Siciliano Studio Design Associates**
718-636-4561; Fax: 702-442-7847
www.geraldsicilianostudio.com
Brooklyn, NY 11215

Custom fabricator of fine art: liturgical sculpture, architectural details, capitals, fountains, fireplaces & mantels; bronze, granite, marble & stone; interior & exterior; repair & restoration; studio & fieldwork; 30 years of experience.

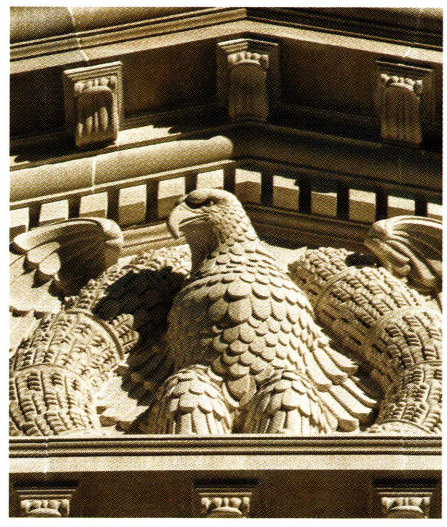
**Key in No. 187**

*This life-size relief torso, titled "Gert," was carved in Botticino marble by Gerald Siciliano.*

**John Tiedemann, Inc.**
877-600-2666; Fax: 201-991-3419
www.johntiedemann.com
North Arlington, NJ 07031

Restorer of interior elements: interior painting & design, liturgical renderings, decorative granite flooring, faux finishes, murals & frescoes, gilding, art glass, fine art, paint & plaster analysis, historic analysis & testing.

**Key in No. 1765**



*Traditional Cut Stone hand carved the eagle at the Palm Beach County Courthouse, West Palm Beach, FL, in Indiana limestone.*

**Traditional Cut Stone, Ltd.**
416-652-8434; Fax: 905-673-8434
www.traditionalcutstone.com
Mississauga, ON Canada, L5S 1S1

European master carvers: architectural ornamentation, fountains, ecclesiastical specialties & monumental statuary; columns & capitals; restoration; historical reproduction in limestone, sandstone & marble; stone design with clay & plaster models.

**Key in No. 2902**

**Wiemann Metalcraft**
918-592-1700; Fax: 918-592-2385
www.wmcraft.com
Tulsa, OK 74107

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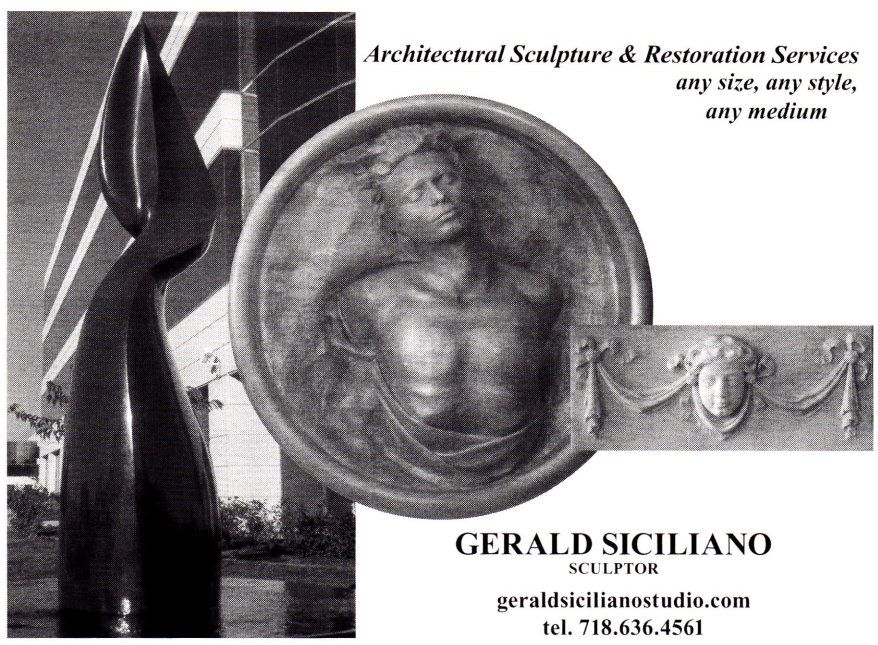
**Key in No. 1223**

*Wiemann Metalcraft's custom-made aluminum belvedere measures 12½ ft. in dia. and has a bronze painted finish.*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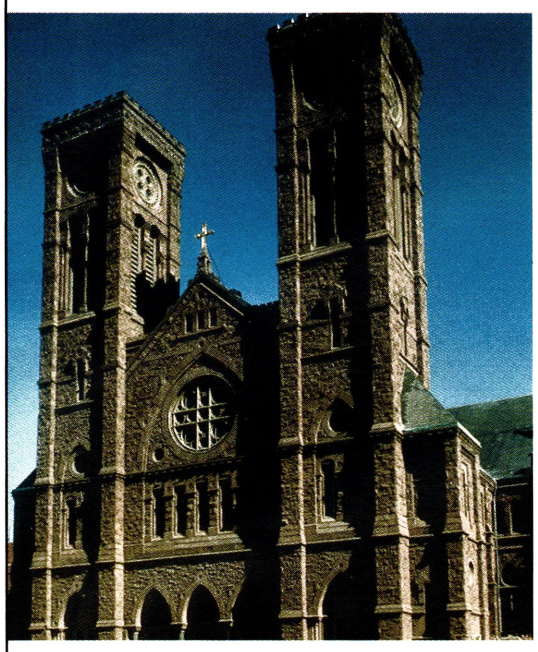

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517-592-9030; No fax
www.brosamersbells.com
Brooklyn, MI 49230

Supplier of pre-owned bells: more than 40,000 lbs. in stock; restoration of cast-bronze bells; yard, fire engine, railroad, church & tower bells; many styles; all sizes.

**Key in No. 7130**

*Brosamer's Bells removed this 2-ton, 59-in. bell from a church steeple in Indiana and shipped it to a new owner in Florida.*

### Canning Studios
203-272-9868; Fax: 203-272-9879
www.canning-studios.com
Cheshire, CT 06410

Restorer & designer of decorative finishes, ornamental plaster & wood: historic-paint analysis; plaster consolidation & stabilization; decorative painting, murals, interior & exterior gilding & wood graining; metal & stone cleaning; art glass restoration.

**Key in No. 5100**

### Cardine Studios
540-439-6460; Fax: 540-439-6462
www.cardinestudios.com
Bealeton, VA 22712

Designer & fabricator of hand-forged metalwork: furnishings, pot racks, lighting, fireplaces, gates, door hardware, straight & curved railings, panels & balusters; columns & capitals; conservatories; iron, bronze, copper, aluminum & stainless; national market.

**Key in No. 1867**

*This metal cross was designed and fabricated by Cardine Studios.*

### Conrad Schmitt Studios, Inc.
800-969-3033; Fax: 262-786-9036
www.conradschmitt.com
New Berlin, WI 53151

Creator, conservator & restorer of decorative painting: stained & art glass; ornamental plasterwork; gilding; crystalline etched-glass designs; murals, mosaics & statuary; for public & religious buildings; since 1889.

**Key in No. 1839**

### EverGreene Architectural Arts, Inc.
212-244-2800; Fax: 212-244-6204
www.evergreene.com
New York, NY 10001

Decorative-arts studio: murals, decorative painting, gilding, plaster, wood, metal, stone & mosaics; new design, conservation & restoration; ecclesiastical, institutional, public & commercial projects; offices in NYC & Chicago.

**Key in No. 2460 for decorative painting; 2678 for plaster**

### Geissler, Inc.
800-862-3159; Fax: 208-938-4721
www.rgeissler.com
Eagle, ID 83616

Manufacturer of solid-oak choir chairs: rush seats & optional kneelers & bookracks; since 1877.

**Key in No. 1027**

*Geissler, a specialist in church furniture, manufactures oak choir chairs with rush seats and kneelers.*

### Gerald Siciliano Studio Design Associates
718-636-4561; Fax: 702-442-7847
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**Key in No. 187**

### Mills Architectural Lighting
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www.millslighting.com
Toronto, ON, Canada M4Y 2L7

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**Key in No. 1410**

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www.nikocontracting.com
Pittsburgh, PA 15213

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*NIKO fabricated this lead-coated copper and bronze cross for a church in West Virginia.*

### Oakbrook Esser Studios, Inc.
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**Key in No. 6190**

### Traditional Cut Stone, Ltd.
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www.traditionalcutstone.com
Mississauga, ON, Canada L5S 1S1

European master carvers: architectural ornamentation, fountains, ecclesiastical specialties & monumental statuary; columns & capitals; restoration; historical reproduction in limestone, sandstone & marble; stone design with clay & plaster models.

**Key in No. 2902**

### Wiemann Metalcraft
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**Key in No. 1223**

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434-263-4827; No fax
www.frederickwilbur-woodcarver.com
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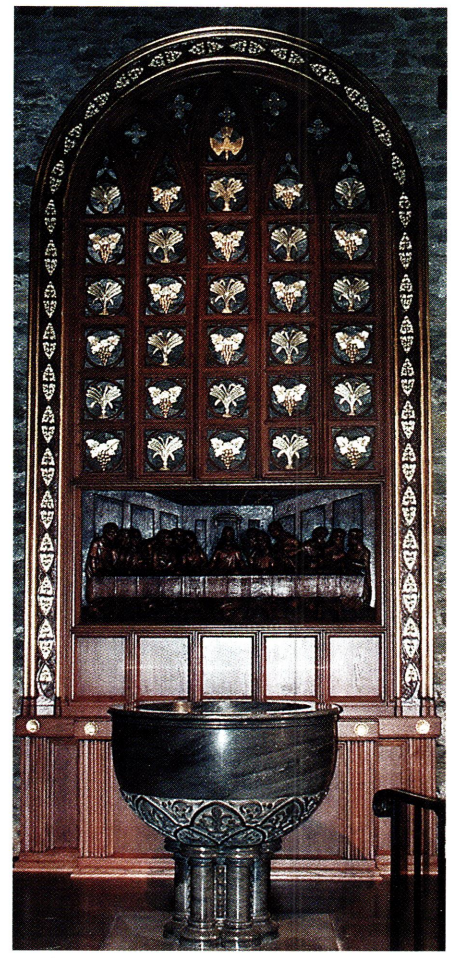
**Key in No. 1650**



*Frederick Wilbur restored the carving and gold-leaf for this baptismal screen at the Grace & Holy Trinity Cathedral in Kansas City, MO.*

### Willet Hauser Architectural Glass
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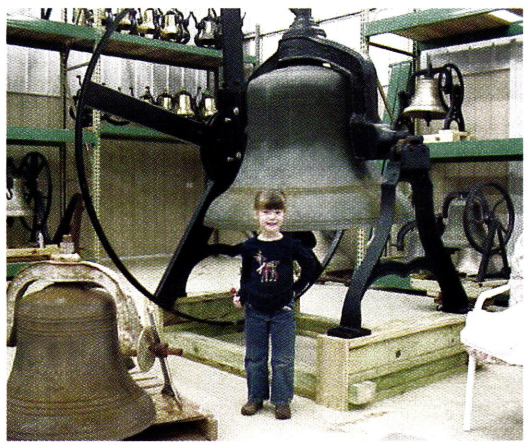

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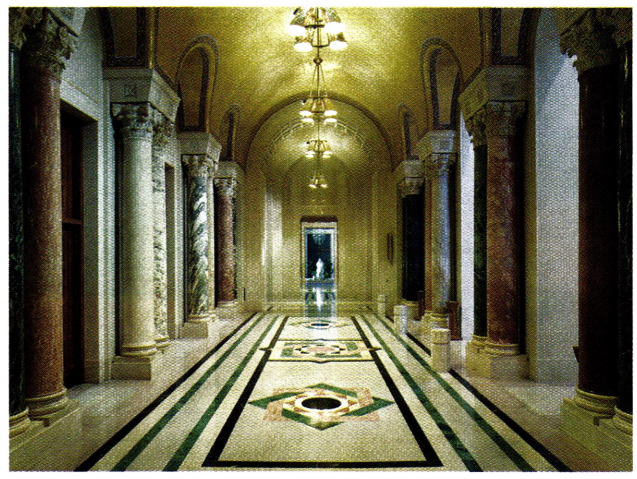

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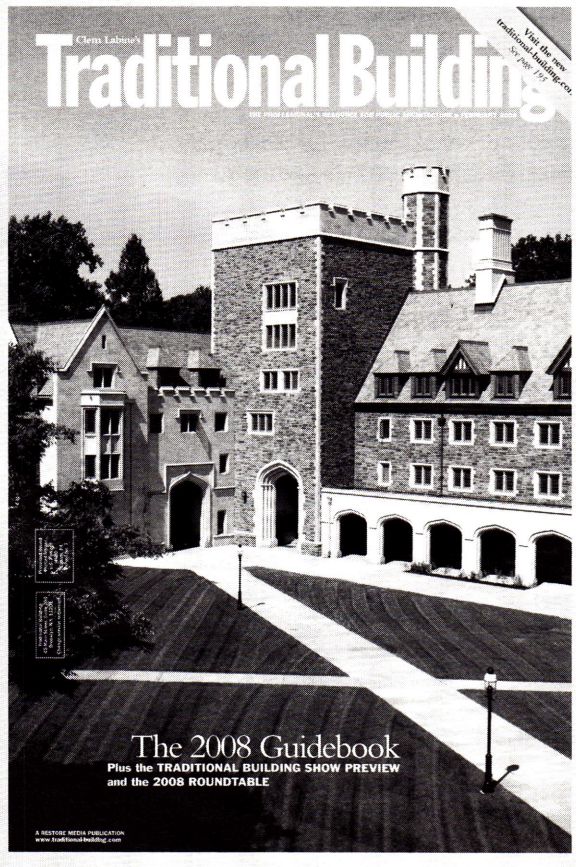


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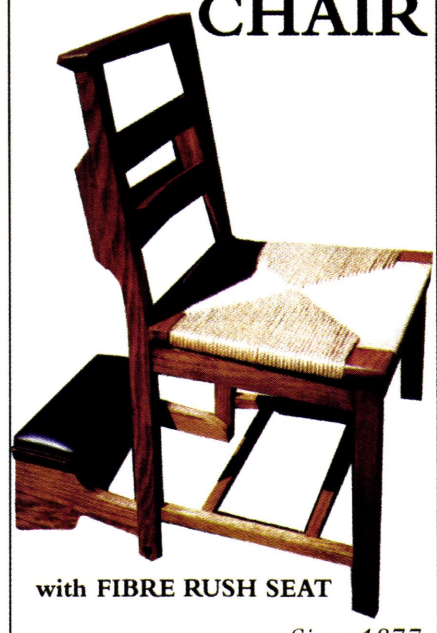

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KEY IN NO. 1027

**www.traditional-building.com**
Internet gateway to historical products

# Columns & Capitals

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

### Allen Architectural Metals, Inc.
800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161

Manufacturer of ornamental metal: street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.

**Key in No. 1005**

### Architectural Products by Outwater, LLC
800-835-4400; Fax: 800-835-4403
www.outwater.com
Bogota, NJ 07603

Manufacturer of 65,000+ decorative building products: architectural moldings & millwork, columns, capitals, wrought-iron components, balustrading, door hardware, lighting, ceiling tile, furniture & cabinet components & more.

**Key in No. 1088**

*Stain-grade classic columns and capitals are available from Outwater in North American red oak, mahogany, maple or cherry in plain or fluted formats; all feature true entasis.*

### Boston Valley Terra Cotta
888-214-3655; Fax: 716-649-7688
www.bostonvalley.com
Orchard Park, NY 14127

Supplier of architectural terra-cotta products: roof tile & Terraclad; columns, capitals, cornices, balustrades, garden sculpture & chimneys; standard & custom shapes & colors; replacements & new designs.

**Key in No. 160**

*Boston Valley custom manufactures columns for restoration and new construction.*

### Bybee Stone Inc.
812-876-2215; Fax: 812-876-6329
www.bybeestone.com
Ellettsville, IN 47429

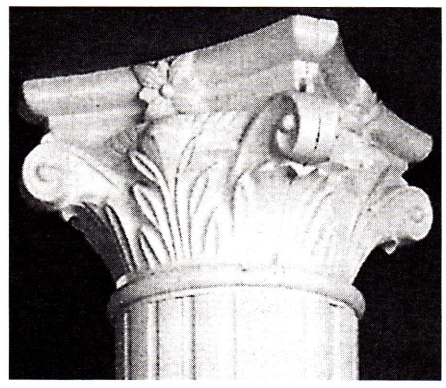
Manufacturer of custom-cut & -carved stone: sculpture & intricate carvings; columns & capitals; stone & carvings for exterior building restoration.

**Key in No. 8096**

### Campbellsville Industries, Inc.
800-467-8135; Fax: 270-465-6839
www.cvilleindustries.com
Campbellsville, KY 42718

Manufacturer & installer of architectural metalwork: steeples, columns, cupolas, street clocks, railings, balustrades, finials, domes, weathervanes & louvers; aluminum, copper, zinc & lead-coated copper.

**Key in No. 2730**



*This modified-Corinthian capital, manufactured by Campbellsville Industries, can be paired with 12-in. columns.*

### Cardine Studios
540-439-6460; Fax: 540-439-6462
www.cardinestudios.com
Bealeton, VA 22712

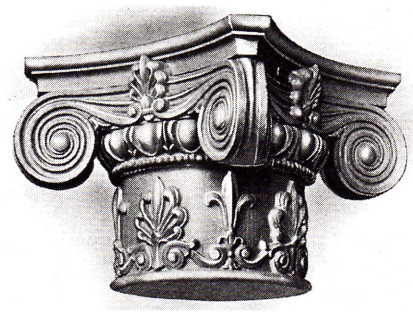
Designer & fabricator of hand-forged metalwork: furnishings, pot racks, lighting, fireplaces, gates, door hardware, straight & curved railings, panels & balusters; columns & capitals; conservatories; iron, bronze, copper, aluminum & stainless; national market.

**Key in No. 1867**

### DeAngelis Iron Work, Inc.
888-676-4766; Fax: 508-238-7757
www.deangelisiron.com
South Easton, MA 02375

Custom fabricator & installer of ornamental metalwork: fences, gates, columns, capitals, benches, stairs & more; cast & wrought iron, bronze, brass, aluminum, stainless steel & more; cresting; grilles.

**Key in No. 1023**



*Replicas of thousands of designs, such as this Ionic Renaissance capital, are included in the catalog of products offered by Decorators Supply.*

### Decorators Supply Corp.
773-847-6300; Fax: 773-847-6357
www.decoratorssupply.com
Chicago, IL 60609

Supplier of period architectural elements: ceiling medallions, mantels, cornices, columns & capitals; plaster of Paris, compo & wood; 14,000 patterns available.

**Key in No. 210**

*Fagan Design & Fabrication manufactured the fluted Roman Doric columns, matching pilasters and carved-wood moldings for this dining room.*

### Fagan Design & Fabrication, Inc.
203-937-1874; Fax: 203-937-7321
www.fagancolumns.net
West Haven, CT 06516

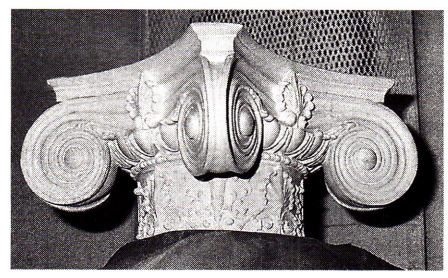
Manufacturer of columns, staircase parts & turnings: stain grades in any wood species; Classical orders; stock & custom; worldwide supplier.

**Key in No. 8210**

### Fischer & Jirouch Co.
216-361-3840; Fax: 216-361-0650
www.fischerandjirouch.com
Cleveland, OH 44103

Manufacturer of handcrafted plaster moldings: columns, capitals, ceiling medallions & fireplace mantels; interior & exterior ornament.

**Key in No. 1960**



*Fischer & Jirouch fabricated this Empire capital with a decorative neck.*

### Gerald Siciliano Studio Design Associates
718-636-4561; Fax: 702-442-7847
www.geraldsicilianostudio.com
Brooklyn, NY 11215

Custom fabricator of fine art: liturgical sculpture, architectural details, capitals, fountains, fireplaces & mantels; bronze, granite, marble & stone; interior & exterior; repair & restoration; studio & fieldwork; 30 years of experience.

**Key in No. 187**

### Haddonstone (USA), Ltd.
719-948-4554; Fax: 719-948-4285
www.haddonstone.com
Pueblo, CO 81001

Manufacturer of classical & contemporary stonework: columns, balustrades, benches, planters, urns, pavers, fountains, gazebos, interior ornament, mantels, statuary & more; cast limestone resembling Portland stone; 500+ designs.

**Key in No. 4020**

*The Venetian Folly L9400 from Haddonstone includes Tuscan columns, a pedimented arch, quoins and balustrading.*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- Porch Posts • Capitals
- Carvings • Fluting & spiral rope twists
- Other large turnings (Diameters to 12ft.; Lengths to 36 ft.)

**Fagan Design & Fabrication, Inc.**
**44 Railroad Ave., Dept. TB, West Haven, CT 06516**
**Phone: (203) 937-1874 Fax: (203) 937-7321**
**www.fagancolumns.net**

KEY IN NO. 8210

### Heather & Little Limited
800-450-0659; Fax: 905-475-9764
www.heatherandlittle.com
Markham, ON, Canada L3R 0H1

Fabricator & supplier of historical sheet-metal roofing & specialty architectural sheet metal: finials, cornices, leader heads, cresting, metal shingles, pressed-metal siding, cupolas, steeples, domes, reproductions; capitals; Kalemein & lot-line metal windows & doors.

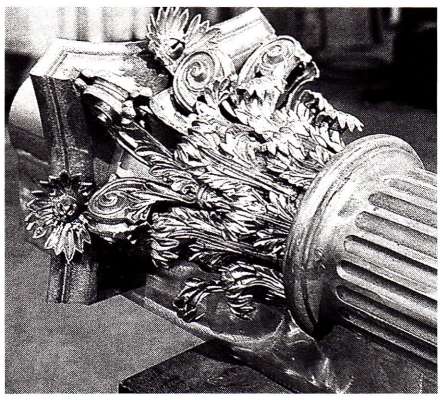
**Key in No. 2470**

*Heather & Little fabricated this copper capital.*

### Historical Arts & Casting, Inc.
800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84088

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snowguards, planters & more; iron, bronze, aluminum & steel; restoration services.

**Key in No. 1210**



*Historical Arts & Casting designed and fabricated the Corinthian capital for this fluted column.*

### Michigan Ornamental Metals
201-945-4930; Fax: 201-945-4931
www.michiganornamental.com
Ridgefield, NJ 07657

Custom fabricator of metal ornament: columns, capitals, rosettes, wreaths, cornices & ceilings; cupolas, domes, gutters, finials, leaders & leader boxes; stamped & pressed sheet metal; replications & historic reproductions.

**Key in No. 9520**

### Traditional Cut Stone, Ltd.
416-652-8434; Fax: 905-673-8434
www.traditionalcutstone.com
Mississauga, ON, Canada L5S 1S1

European master carvers: architectural ornamentation, fountains, ecclesiastical specialties & monumental statuary; columns & capitals; restoration; historical reproduction in limestone, sandstone & marble; stone design with clay & plaster models.

**Key in No. 2902**

### Wiemann Metalcraft
918-592-1700; Fax: 918-592-2385
www.wmcraft.com
Tulsa, OK 74107

Designer, fabricator, finisher & installer of custom ornamental metalwork: railings, fences, gates, columns, balustrades, lighting, grilles, furniture, planters, doors & more; all cast & wrought metal alloys, finishes & architectural styles; since 1940.

**Key in No. 1223**

### Wilbur, Frederick - Woodcarver
434-263-4827; No fax
www.frederickwilbur-woodcarver.com
Lovingston, VA 22949

Wood carver: ecclesiastical elements, Gothic tracery, reredos & wood screens; columns, furniture, mantels, casing/molding, friezes, rosettes, heraldry, signage & doors; all wood species; original designs; reproductions.

**Key in No. 1650**

*This basswood capital was carved by Wilbur.*

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KEY IN NO. 4020

# Doors & Door Hardware

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

### Allen Architectural Metals, Inc.
800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161

Manufacturer of ornamental metal: street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.

**Key in No. 1005**

### Architectural Products by Outwater, LLC
800-835-4400; Fax: 800-835-4403
www.outwater.com
Bogota, NJ 07603

Manufacturer of 65,000+ decorative building products: architectural moldings & millwork, columns, capitals, wrought-iron components, balustrading, door hardware, lighting, ceiling tile, furniture & cabinet components & more.

**Key in No. 1088**

*Outwater's extensive collection of architectural products includes a wide variety of doorknobs.*

### Architectural Resource Center
800-370-8808; Fax: 603-942-7465
www.aresource.com
Northwood, NH 03261

Supplier of historically styled hardware: sash pulleys, lifts & locks, sash chain & rope; weather stripping; patented sash weights.

**Key in No. 1670**

### Ball & Ball Hardware
610-363-7330; Fax: 610-363-7639
www.ballandball.com
Exton, PA 19341

Custom manufacturer & supplier of ornamental metalwork & hardware: door, window, shutter, gate & furniture hardware; fireplace tools; wrought iron, steel, aluminum, bronze, brass, copper & cast iron; custom reproductions.

**Key in No. 2930**

*Ball & Ball Hardware restored and refinished this decorative door pull.*

### Bovard Studio, Inc.
641-472-2824; Fax: 641-472-0974
www.bovardstudio.com
Fairfield, IA 52556

Restorer, designer & fabricator of stained-glass windows: wood, aluminum & steel frames; protective glazing systems; replicates lost stained-glass windows; faceted glass; mosaics; hand-painted kiln-fired original art glass.

**Key in No. 7690**

### Builder's Lock & Hardware
800-260-5625; Fax: 508-643-9102
www.builderslock.com
North Attleboro, MA 02760

Supplier & retailer of door hardware: hinges, dead bolts, door pulls, lever & latch sets; stainless steel, brass, bronze & iron; screen door & window hardware.

**Key in No. 1982**

### Cardine Studios
540-439-6460; Fax: 540-439-6462
www.cardinestudios.com
Bealeton, VA 22712

Designer & fabricator of hand-forged metalwork: furnishings, pot racks, lighting, fireplaces, gates, door hardware, straight & curved railings, panels & balusters; columns & capitals; conservatories; iron, bronze, copper, aluminum & stainless; national market.

**Key in No. 1867**

*These door pulls from Cardine Studios are forged in bronze; the leaf work is forged in copper and riveted to the door pulls.*

### Coppa Woodworking
310-548-4142; Fax: 310-548-6740
www.coppawoodworking.com
San Pedro, CA 90731

Manufacturer of wood screen doors & storm doors: more than 300 styles; pine, Douglas fir, oak, mahogany, cedar, knotty alder & redwood; any size; many options; arch & roundtop, double, French doors, doggie doors, window screens & more.

**Key in No. 9600**

*Craftsman/ Mission style doors are available from Coppa Woodworking.*

### E.R. Butler & Co.
212-925-3565; Fax: 212-925-3305
www.erbutler.com
New York, NY 10012

Manufacturer of historically accurate, premium-quality hardware for doors, windows & furniture: brass, bronze, nickel, silver & wrought iron; complete design selections of Early American period hardware; many finishes.

**Key in No. 2260**

*This decorative brass dragon door pull, model # 131, is one of many traditional styles available from E.R. Butler.*

### Grabill Windows & Doors
810-798-2817; Fax: 810-798-2809
www.grabillwindow.com
Almont, MI 48003

Designer & manufacturer of high-performance all-wood, bronze & aluminum-clad windows & doors: commercial & historic projects; traditional to contemporary; historic replicas; green windows for sustainable designs.

**Key in No. 1910**

*This full-panel mahogany door was manufactured by Grabill.*

### Heather & Little Limited
800-450-0659; Fax: 905-475-9764
www.heatherandlittle.com
Markham, ON, Canada L3R 0H1

Fabricator & supplier of historical sheet-metal roofing & specialty architectural sheet metal: finials, cornices, leader heads, cresting, metal shingles, pressed-metal siding, cupolas, steeples, domes, reproductions; capitals; Kalemein & lot-line metal windows & doors.

**Key in No. 2470**

### Historical Arts & Casting, Inc.
800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84088

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snowguards, planters & more; iron, bronze, aluminum & steel; restoration services.

**Key in No. 1210**

### House of Antique Hardware
888-265-1038; Fax: 503-233-1312
www.houseofantiquehardware.com
Portland, OR 97232

Manufacturer & supplier of vintage reproduction door, window, shutter, cabinet & furniture hardware & accessories: Federal, Victorian, Colonial Revival, Craftsman & Deco styles; push-button switches & plates; registers & grilles.

**Key in No. 1096**

*This traditional door set and steeple-tip door hinge are available from House of Antique Hardware in nine finishes.*

### James Peters & Son, Inc.
215-739-9500; Fax: 215-739-9779
www.jamespetersandson.com
Philadelphia, PA 19122

Manufacturer of ornamental gate, shutter & barn door hardware: gate, barn & stable hinges; shutter bolts, shutter dogs & pull rings.

**Key in No. 1240**

*This door pull, model #9000 from James Peters & Son, is 10 in. long.*

NEW YORK LOS ANGELES CHICAGO GREENWICH LONDON 212 367 7000 NANZ.COM

KEY IN NO.1988

*Kayne & Son fabricated this thumblatch, a replica of the Colton House Suffolk thumblatch.*

### Kayne & Son Custom Hardware
828-667-8868; Fax: 828-665-8303
www.customforgedhardware.com
Candler, NC 28715

Manufacturer of forged- & cast-metal hardware: strap, H, HL, butterfly & butt hinges; thumb-latch locksets, gate hardware, shutter dogs & more; fireplace tools; bathroom accessories & kitchen equipment; restoration; catalog $5.

**Call for more information.**

*The Ultimate Outswing French Door is one of many traditionally styled doors available from Marvin.*

### Marvin Windows and Doors
888-537-7828; Fax: 651-452-3074
www.marvin.com
Warroad, MN 56763

Manufacturer of wood windows & doors: clad & clad-wood; solid wood entry doors; special shapes; custom sizes & more than 11,000 standard sizes; historical replicas; interior & exterior storm windows.

**Key in No. 1907**

*Old Smithy Shop fabricated this Early American hand-forged hinge and matching latch.*

### Old Smithy Shop
888-672-4113; Fax: Same as phone
www.oldsmithyshop.com
Brookline, NH 03086

Custom fabricator of hand-forged Early American hardware: Suffolk & Norfolk latches & pulls; pintle strap hinges & H & H-L hinges & cabinet latches; window, gate & barn hardware; fireplace tools; custom metalwork.

### Omnia Industries Inc.
973-239-7272; Fax: 973-239-5960
www.Omniaindustries.com
Cedar Grove, NJ 07009

Manufacturer of solid-brass hardware: 60 knob & lever styles; for latchsets, mortise locksets & deadbolt locksets, hinges, cremone bolts; bath accessories; traditional, ornate & contemporary styles.

*The Georgica in Omnia's Hamptons Collection features a classic handle design with detailing in the interior knob and lever trim options; it is available in five finishes*

### Parrett Windows & Doors
800-541-9527; Fax: 877-238-2452
www.parrettwindows.com
Dorchester, WI 54425

Manufacturer of custom wood & aluminum-clad windows: any geometric shape, numerous wood species & complete finishing capabilities; historical replications; custom wood doors in numerous species with complete finishing options; screen doors, casings & moldings.

**Key in No. 3003**

*Parrett Windows & Doors built this custom door to match historical specifications.*

### Richards-Wilcox, Inc.
800-253-5668; Fax: 630-897-6994
www.rwhardware.com
Aurora, IL 60506

Manufacturer of historical reproduction door hardware: for slide, swing & slide-fold doors; strap hinges, door pulls, bolts, latches, trucks & track for doors weighing up to 5,000 lbs.; Turn of the Century designs & replicas.

**Key in No. 1579**

*Richards-Wilcox fabricated the traditional hardware for these double doors.*

### Samuel Yellin Metalworkers Co.
610-527-2334; Fax: 610-527-2412
www.samuelyellin.com
Bryn Mawr, PA 19010

Fabricator of custom forged metalwork: grates, grilles, railings, balustrades, fences, gates, fire screens, andirons, light fixtures & hardware.

**Key in No. 1984**

### The Nanz Company
212-367-7000; Fax: 212-367-7375
www.nanz.com
New York, NY 10013

Designer & manufacturer of period-style door, window & cabinet hardware: Gothic to Modern; specialized finishes; bathroom fittings & accessories; works directly with architects, designers & builders; consultation, specification & restoration services.

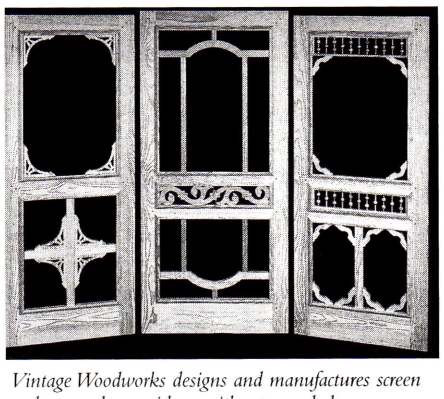
**Call for more information.**

*Traditionally styled hardware is available from The Nanz Company.*

### Vintage Woodworks
903-356-2158; Fax: 903-356-3023
www.vintagewoodworks.com
Quinlan, TX 75474

Manufacturer & supplier of Victorian millwork: wood porch parts, turned & sawn balusters, posts, railings, brackets, moldings, corbels, custom-length spandrels, screen/ storm doors, window caps, wood shingles & more; cellular PVC profiles.

**Key in No. 1061**



*Vintage Woodworks designs and manufactures screen and storm doors with or without spandrels.*

### Wiemann Metalcraft
918-592-1700; Fax: 918-592-2385
www.wmcraft.com
Tulsa, OK 74107

Designer, fabricator, finisher & installer of custom ornamental metalwork: railings, fences, gates, columns, balustrades, lighting, grilles, furniture, planters, doors & more; all cast & wrought metal alloys, finishes & architectural styles; since 1940.

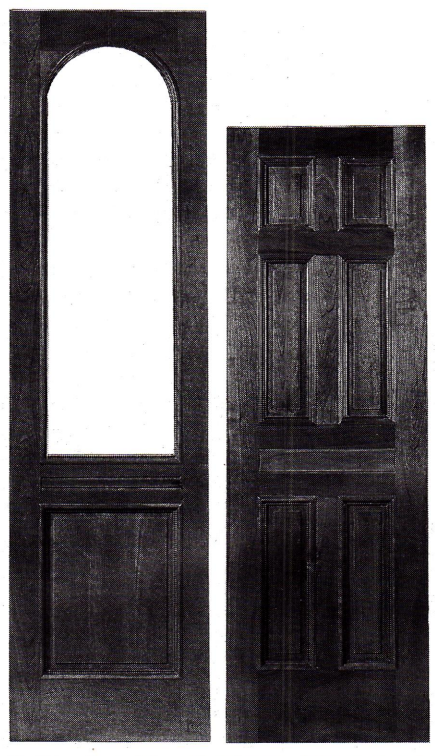
**Key in No. 1223**

*Wiemann Metalcraft fabricated these Art Deco door panels in bronze.*

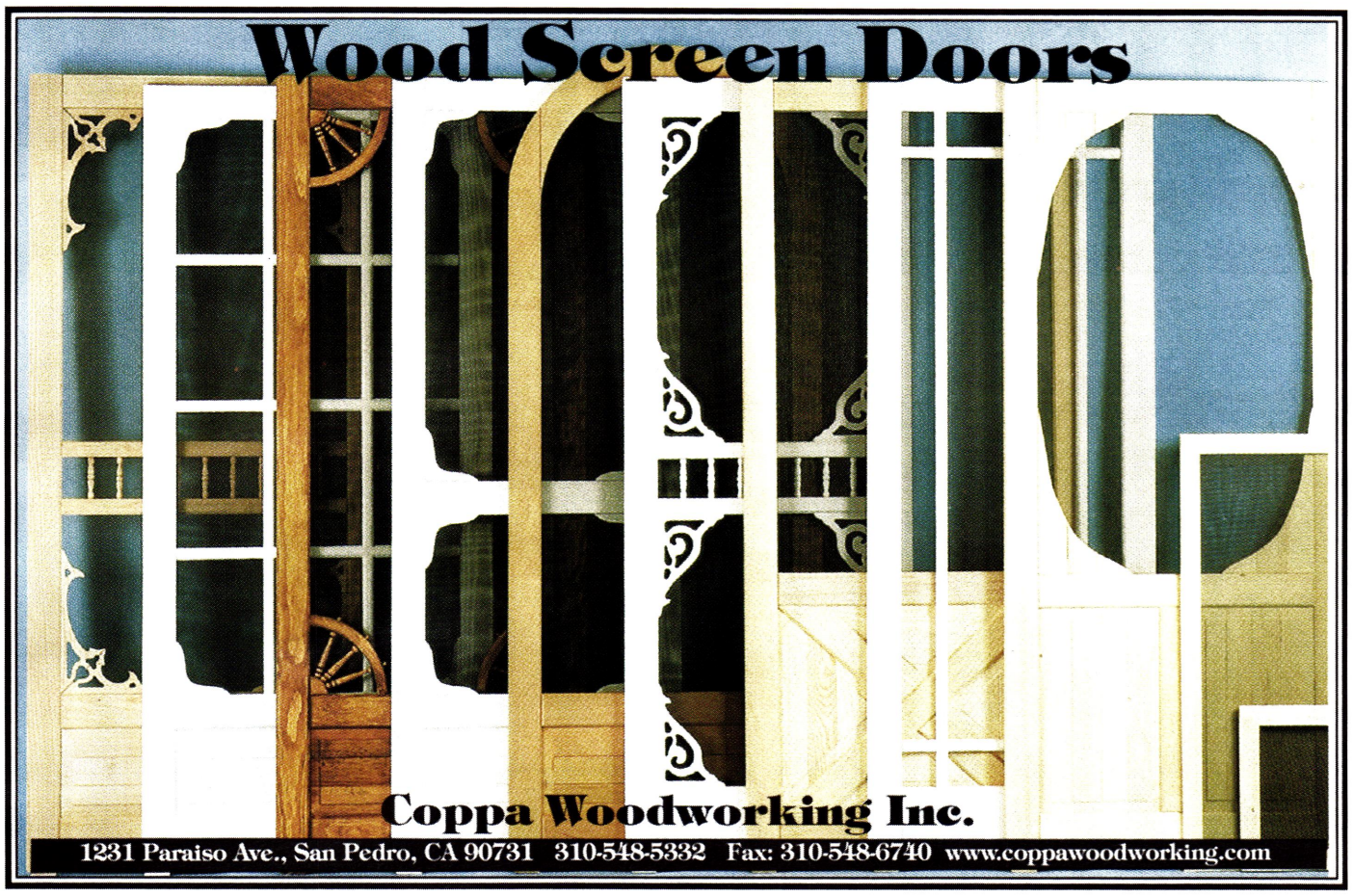
### Wood Window Workshop
800-724-3081; Fax: 315-733-0933
www.woodwindowworkshop.com
Utica, NY 13501

Custom fabricator of wood windows, doors, storms & screens: any size, shape & species; full mortise-&-tenon construction, true-divided lite, hard-to-find hardware & restoration & insulated glass; factory finishes; reproductions; for storefronts.

**Key in No. 9640**



*Traditionally styled wood and storm doors are custom made by Wood Window Workshop.*

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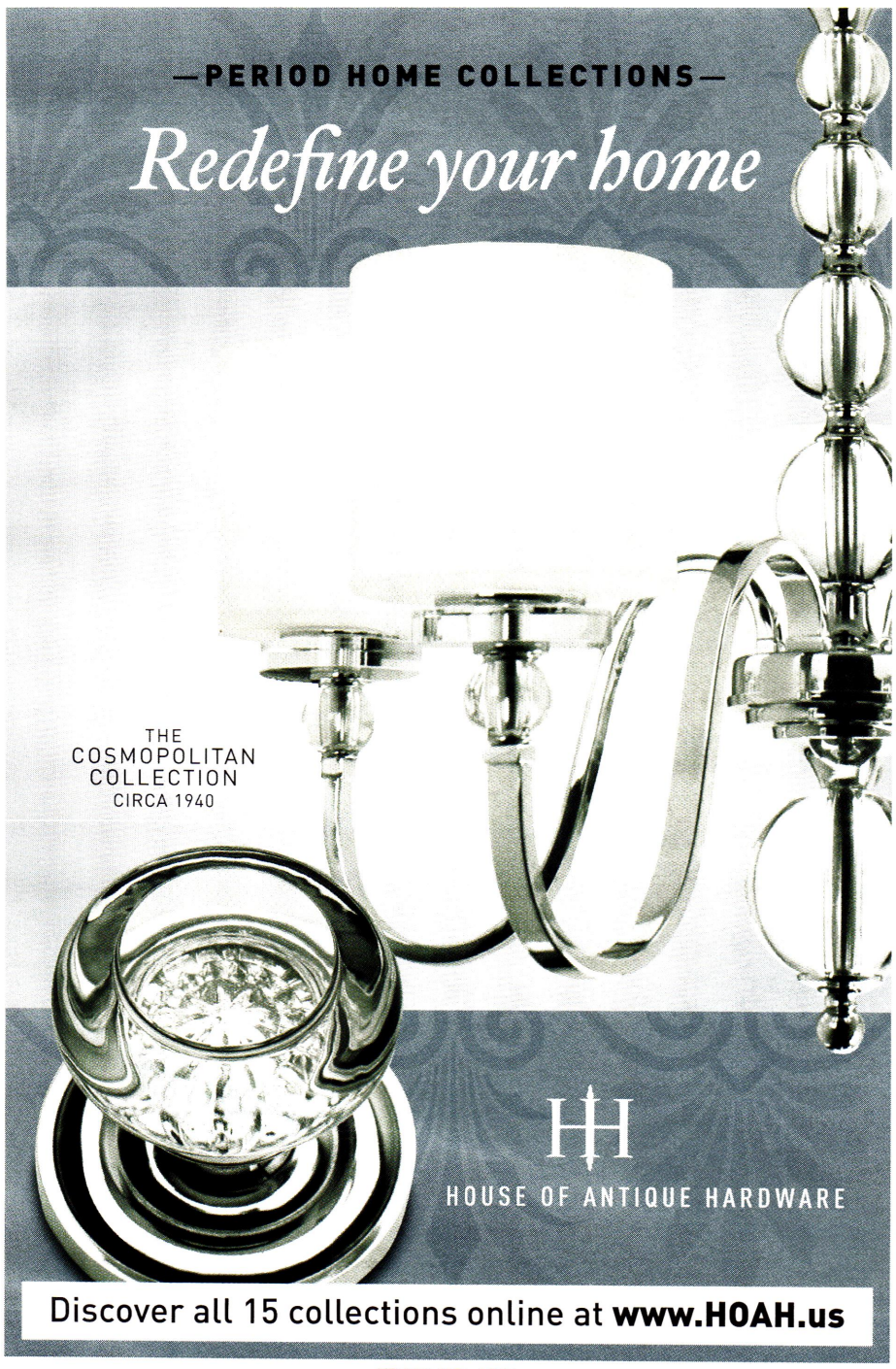


KEY IN NO. 1096

KEY IN NO. 1910

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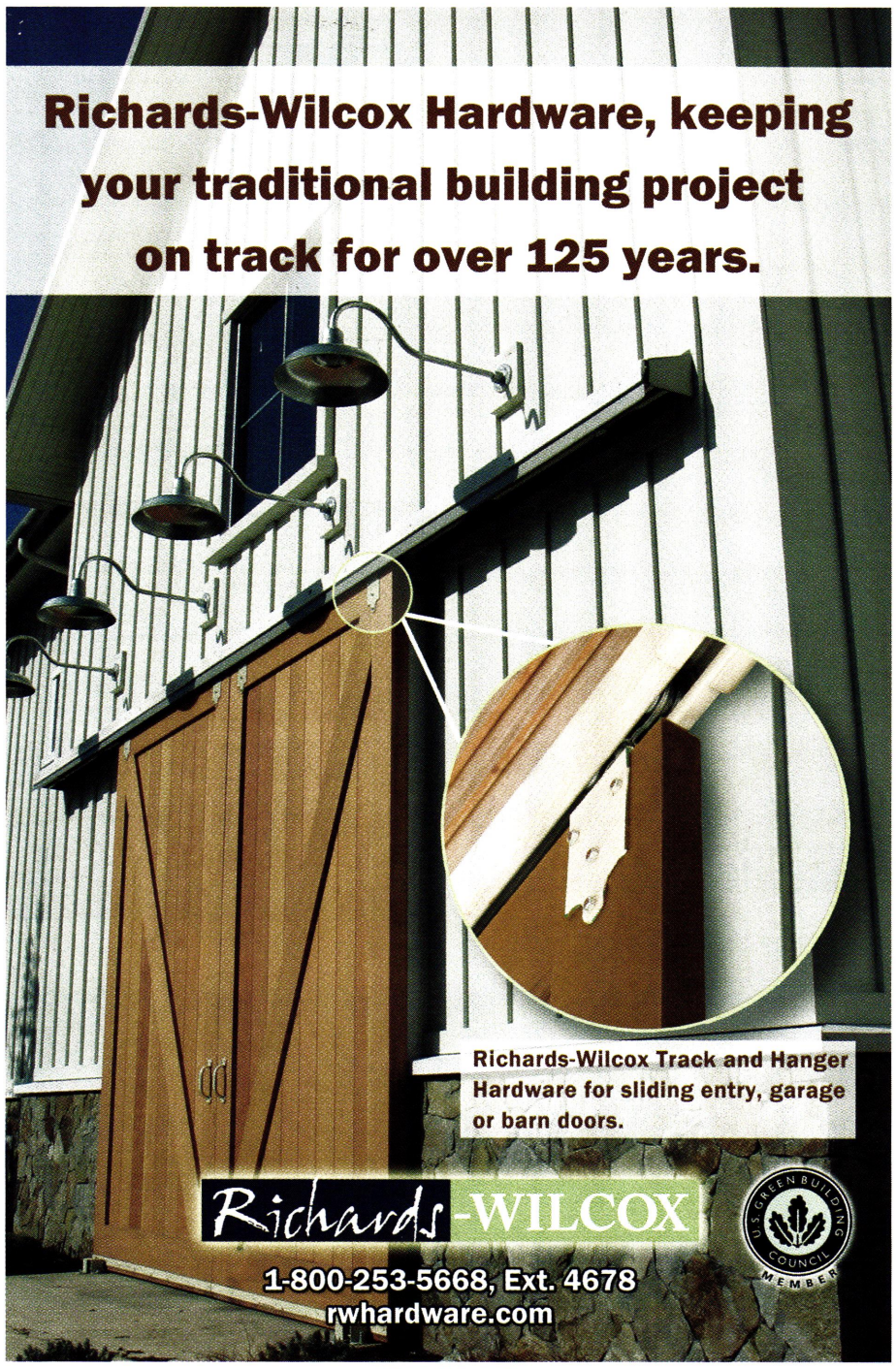


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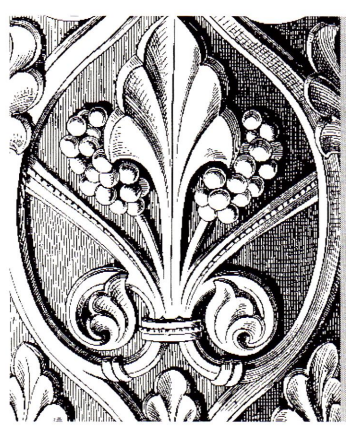
KEY IN NO. 1982



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# Making Strides in Trades Education

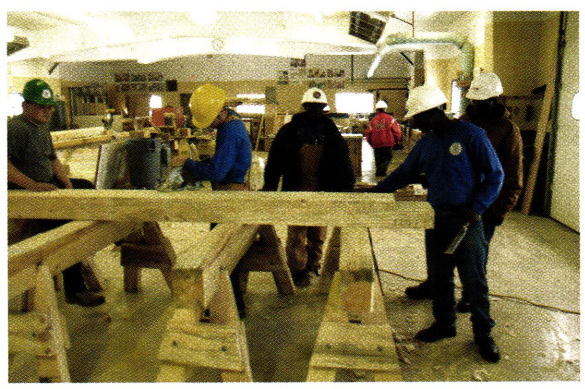
By Rudy R. Christian, PTN Executive Director

2009 has been a big year for PTN's efforts to fulfill its educational mandate. The agenda at the February face-to-face board meeting of the Board of Directors in Charleston, SC, was more like a strategy meeting to figure out how to fit all of the educational programming opportunities into the calendar year.

That programming began with the Spring Greening Conference held by Historic Green in the storm battered Lower 9th Ward and Holy Cross Historic District in New Orleans in March. Students and volunteers from across the country came together to work on numerous projects, including restoring historic wooden windows for use in the shotgun houses being restored by the Preservation Resource Center.

In May, PTN was invited by Bill Dupont of the University of Texas, San Antonio, to participate in an historic window workshop at the historic Fire Station #11. There, nearly two dozen students and local residents were taught to understand the "whole building" approach to looking at window performance, aging and maintenance. Both wooden and metal windows were restored for continued service in the building that will become part of the university's historic restoration program.

After a weekend on Nantucket with the students participating in this summer's renowned University of Florida field school, it was off to Frankfort, KY, for PTN's first Preservation Rendezvous. There we were joined by the Timber Framers Guild and the Slate Roof Contractors Association for two workshops and public demonstrations on the July 4th weekend. The folks who came got to see people practicing traditional trades as well as a replica of a medieval trebuchet launching watermelons into the Kentucky River.



*Students at the Nebraska Pine Ridge Job Corps program learn new skills in an old trade: timber framing.*

The Rendezvous was closely followed by our annual summer field school which took place this year in Lafayette Cemetery #1 in New Orleans. In collaboration with the Tulane School of Architecture and with the generous support of the World Monuments Fund, the 1772 Foundation and NCPTT, six graduate students were taught traditional lime plastering and brick masonry as part of the ongoing restoration of the historic Taylor Tomb.

From August 25-29, PTN held its International Trades Education Symposium (ITES) and International Preservation Trades Workshop (IPTW) in historic Leadville, CO. The event was sponsored by the Colorado Mountain College and attracted speakers from across America and from Scotland, England and France.

The year's programming was completed at a timber-framing workshop at the Pine Ridge Job Corps in Chadron, NE, October 26-30. The first major snow storm of the season made the event challenging, but the students in the carpentry program enjoyed being introduced to traditional trades education and learning how to work with heavy timbers and mortise-and-tenon joinery.

Plans are already in the works for 2010's traditional trades education programming, and we're always interested in new opportunities. If you have an idea for an event, workshop, rendezvous site or field school location, please contact PTN executive director Rudy R. Christian at rchristian@PTN.org or on 330-465-1504. We hope to see you at a future PTN event! ◆

*The Preservation Trades Network (PTN) is a non-profit 501(c)3 membership organization incorporated as an education, networking and outreach organization. PTN is a registered provider of AIA/CES CEUs. To see Rudy's blog, go to www.traditional-building.com.*

# Windows & Window Hardware

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

### Allen Architectural Metals, Inc.
800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161

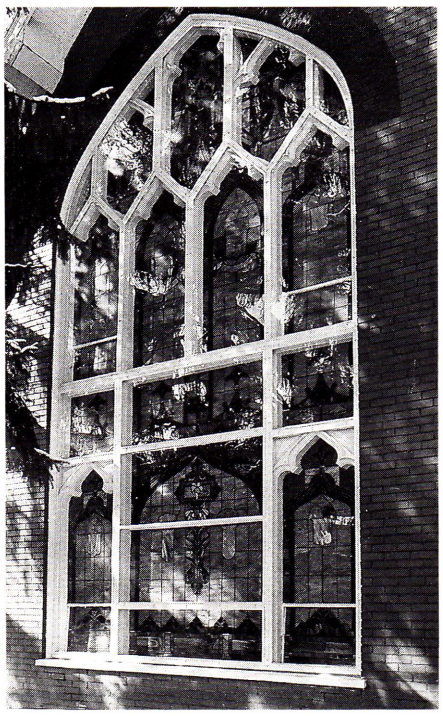
Manufacturer of ornamental metal: street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.

**Key in No. 1005**

### Allied Window, Inc.
800-445-5411; Fax: 513-559-1883
www.alliedwindow.com
Cincinnati, OH 45241

Manufacturer & installer of 'invisible' storm windows: custom colors, shapes & glazing materials; aluminum; protection from UV & vandalism; interior & exterior; commercial & residential applications.

**Key in No. 690**



*Allied Window custom manufactured an "invisible" storm window to protect the stained-glass window of this church.*

### Architectural Products by Outwater, LLC
800-835-4400; Fax: 800-835-4403
www.outwater.com
Bogota, NJ 07603

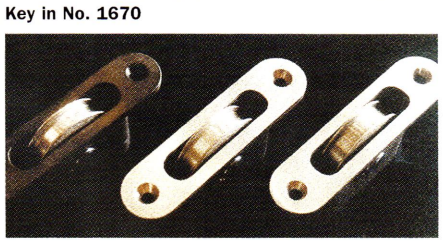
Manufacturer of 65,000+ decorative building products: architectural moldings & millwork, columns, capitals, wrought-iron components, balustrading, door hardware, lighting, ceiling tile, furniture & cabinet components & more.

**Key in No. 1088**

### Architectural Resource Center
800-370-8808; Fax: 603-942-7465
www.aresource.com
Northwood, NH 03261

Supplier of historically styled hardware: sash pulleys, lifts & locks, sash chain & rope; weather stripping; patented sash weights.

**Key in No. 1670**



*These sash pulleys by Architectural Resource Center are offered in brass and bronze.*

### Ball & Ball Hardware
610-363-7330; Fax: 610-363-7639
www.ballandball.com
Exton, PA 19341

Custom manufacturer & supplier of ornamental metalwork & hardware: door, window, shutter, gate & furniture hardware; fireplace tools; wrought iron, steel, aluminum, bronze, brass, copper & cast iron; custom reproductions.

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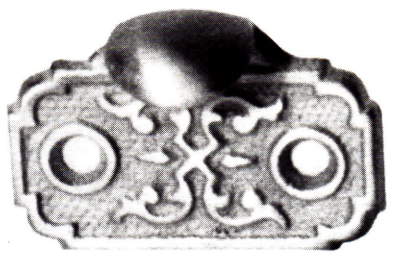


*This cast-brass sash lift from Ball & Ball measures 1x2 in.*

### Builder's Lock & Hardware
800-260-5625; Fax: 508-643-9102
www.builderslock.com
North Attleboro, MA 02760

Supplier & retailer of door hardware: hinges, dead bolts, door pulls, lever & latch sets; stainless steel, brass, bronze & iron; screen door & window hardware.

**Key in No. 1982**

### Climate Seal
952-448-5300; Fax: 952-448-2613
www.climateseal.com
Chaska, MN 55318

Manufacturer of storm windows: interior, magnetic; Thermal, Acoustic, Preservation & Pro series; installs in existing window cavity.

**Key in No. 1963**

*An interior storm from Climate Seal provides insulation while protecting the appearance of this historic window.*

### Coppa Woodworking
310-548-4142; Fax: 310-548-6740
www.coppawoodworking.com
San Pedro, CA 90731

Manufacturer of wood screen doors & storm doors: more than 300 styles; pine, Douglas fir, oak, mahogany, cedar, knotty alder & redwood; any size; many options; arch & roundtop, double, French doors, doggie doors, window screens & more.

**Key in No. 9600**

### E.R. Butler & Co.
212-925-3565; Fax: 212-925-3305
www.erbutler.com
New York, NY 10012

Manufacturer of historically accurate, premium-quality hardware for doors, windows & furniture: brass, bronze, nickel, silver & wrought iron; complete design selections of Early American period hardware; many finishes.

**Key in No. 2260**

### Grabill Windows & Doors
810-798-2817; Fax: 810-798-2809
www.grabillwindow.com
Almont, MI 48003

Designer & manufacturer of high-performance all-wood, bronze & aluminum-clad windows & doors: commercial & historic projects; traditional to contemporary; historic replicas; green windows for sustainable designs.

**Key in No. 1910**

*Grabill manufactured these fixed, round-top pine windows for a restoration project.*

### Heather & Little Limited
800-450-0659; Fax: 905-475-9764
www.heatherandlittle.com
Markham, ON, Canada L3R 0H1

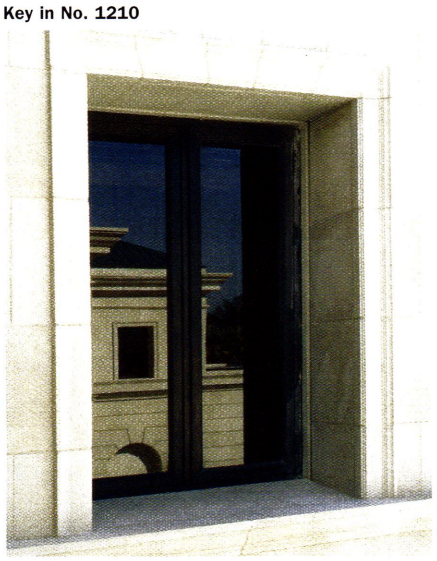
Fabricator & supplier of historical sheet-metal roofing & specialty architectural sheet metal: finials, cornices, leader heads, cresting, metal shingles, pressed-metal siding, cupolas, steeples, domes, reproductions; capitals; Kalemein & lot-line metal windows & doors.

**Key in No. 2470**

### Historical Arts & Casting, Inc.
800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84088

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snowguards, planters & more; iron, bronze, aluminum & steel; restoration services.

**Key in No. 1210**



*This cast-bronze window from Historical Arts & Casting comes in two sizes - 4 ft.-4½ in. x 3 ft. and 2 ft.-10½ in. x 2½ ft.*

### House of Antique Hardware
888-265-1038; Fax: 503-233-1312
www.houseofantiquehardware.com
Portland, OR 97232

Manufacturer & supplier of vintage reproduction door, window, shutter, cabinet & furniture hardware & accessories: Federal, Victorian, Colonial Revival, Craftsman & Deco styles; push-button switches & plates; registers & grilles.

**Key in No. 1096**

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www.jamespetersandson.com
Philadelphia, PA 19122

Manufacturer of ornamental gate, shutter & barn door hardware: gate, barn & stable hinges; shutter bolts, shutter dogs & pull rings.

**Key in No. 1240**

### Kayne & Son Custom Hardware
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www.customforgedhardware.com
Candler, NC 28715

Manufacturer of forged- & cast-metal hardware: strap, H, HL, butterfly & butt hinges; thumb-latch locksets, gate hardware, shutter dogs & more; fireplace tools; bathroom accessories & kitchen equipment; restoration; catalog $5.

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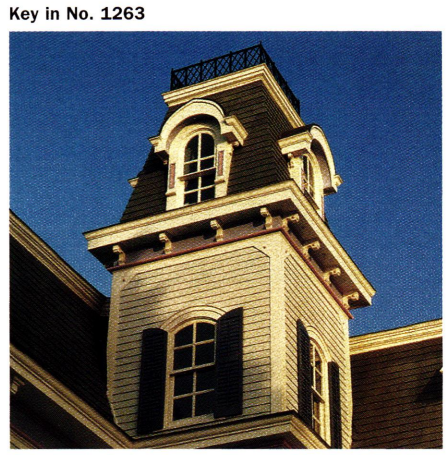
### Marvin Windows and Doors
888-537-7828; Fax: 651-452-3074
www.marvin.com
Warroad, MN 56763

Manufacturer of wood windows & doors: clad & clad-wood; solid wood entry doors; special shapes; custom sizes & more than 11,000 standard sizes; historical replicas; interior & exterior storm windows.

**Key in No. 1263**

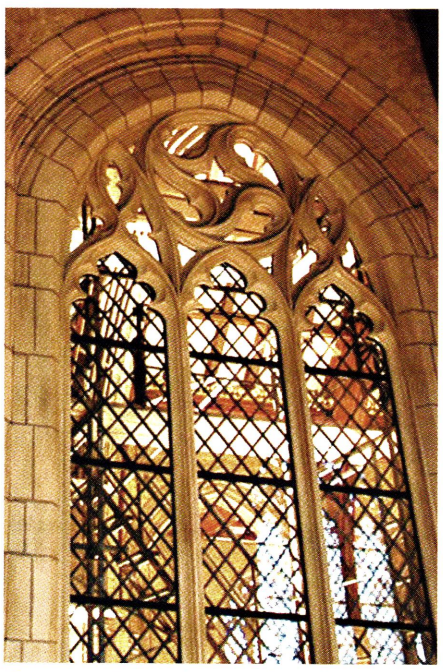


*Marvin Windows & Doors' Ultimate Double Hung wood windows are available in a variety of configurations.*

### Parrett Windows & Doors
800-541-9527; Fax: 877-238-2452
www.parrettwindows.com
Dorchester, WI 54425

Manufacturer of custom wood & aluminum-clad windows: any geometric shape, numerous wood species & complete finishing capabilities; historical replications; custom wood doors in numerous species with complete finishing options; screen doors, casings & moldings.

**Key in No. 3003**

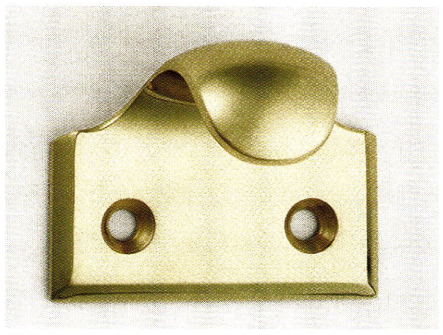


*Parrett manufactured the custom 24x8-ft. wood window frames for this 200-year old church.*

### Phelps Company
802-257-4314; Fax: 802-258-2270
www.phelpscompany.com
Brattleboro, VT 05301

Manufacturer of traditional hot-forged solid-brass window hardware: sash pulleys, weights, chains, lifts & locks; stop-bead adjusters, spring bolts, window ventilation locks, casement hardware, storm/screen-door latch sets & more.

**Key in No. 6001**



*The model #LF23 sash lift from Phelps is hot forged from solid brass and hand polished.*

### Rosewood Custom Cabinetry & Millwork, Inc.
203-483-4172; Fax: 203-483-4162
www.rosewoodmillwork.com
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### Seekircher Steel Window Repair Corp.
914-734-8004; Fax: 914-734-8009
www.seekirchersteelwindow.com
Peekskill, NY 10566

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**Key in No. 3590**

*Seekircher Steel Window Repair restored these original steel windows for a project in Corbett, OR.*

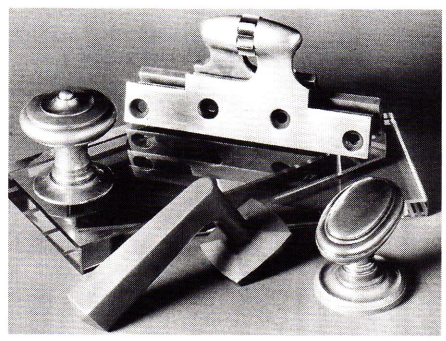
### St. Cloud Window, Inc.
800-383-9311; Fax: 320-255-1513
www.stcloudwindow.com
St. Cloud, MN 56302

Manufacturer of aluminum windows for heavy commercial & architectural replacement: dual windows for acoustical abatement.

### The Nanz Company
212-367-7000; Fax: 212-367-7375
www.nanz.com
New York, NY 10013

Designer & manufacturer of period-style door, window & cabinet hardware: Gothic to Modern; specialized finishes; bathroom fittings & accessories; works directly with architects, designers & builders; consultation, specification & restoration services.

**Call for more information.**



*The Nanz Company offers knobs, levers and knuckle hinges in cast brass or bronze.*

### Vintage Woodworks
903-356-2158; Fax: 903-356-3023
www.vintagewoodworks.com
Quinlan, TX 75474

Manufacturer & supplier of Victorian millwork: wood porch parts, turned & sawn balusters, posts, railings, brackets, moldings, corbels, custom-length spandrels, screen/storm doors, window caps, wood shingles & more; cellular PVC profiles.

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www.wmcraft.com
Tulsa, OK 74107

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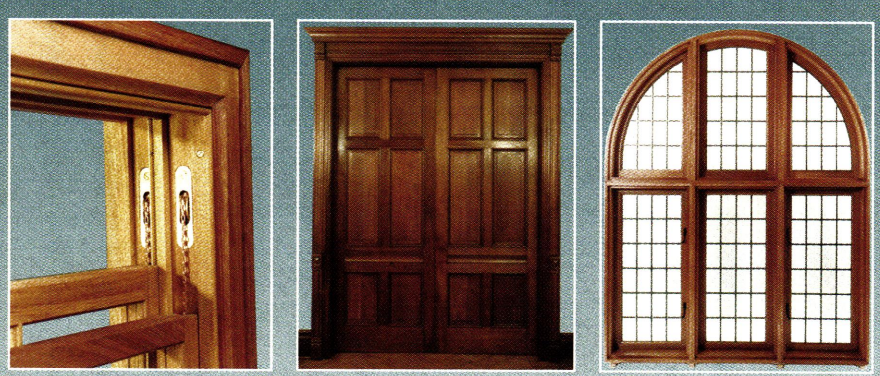

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www.traditional-building.com Internet gateway to historical products

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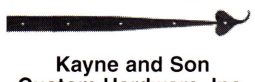

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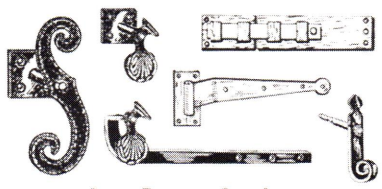

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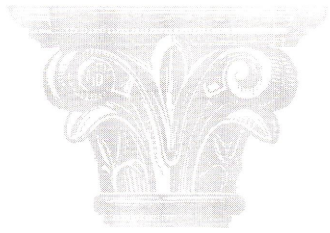

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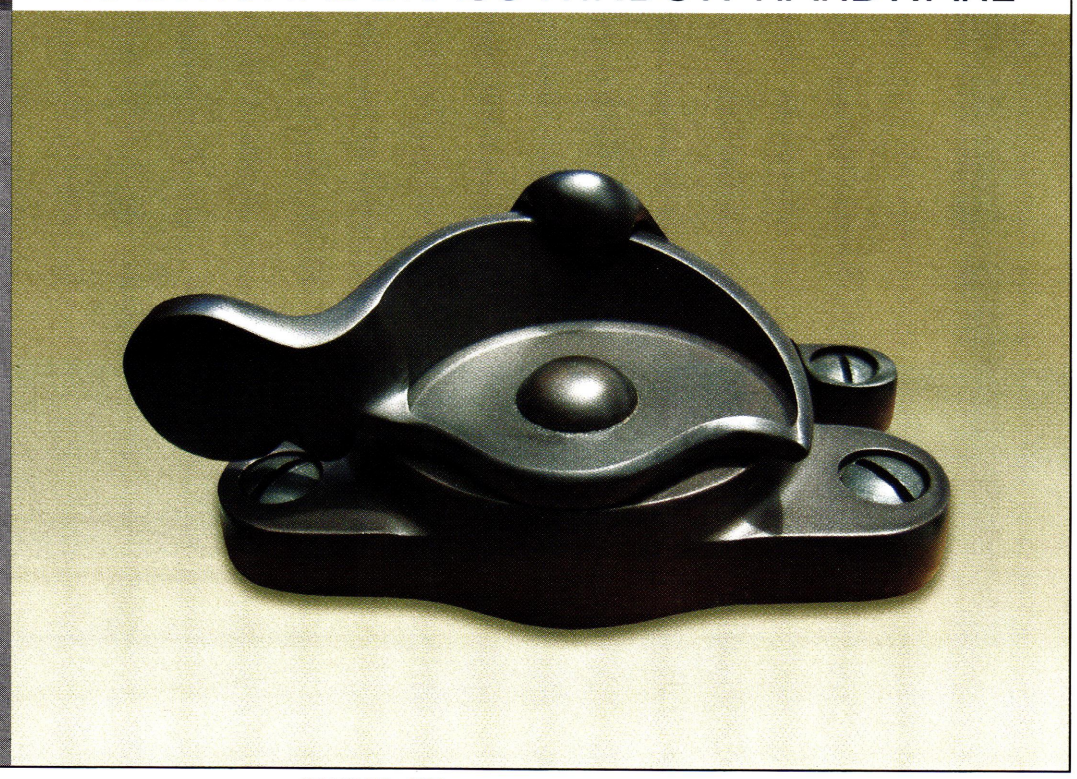


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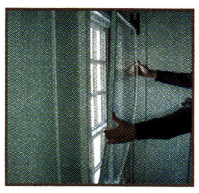

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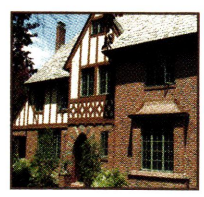

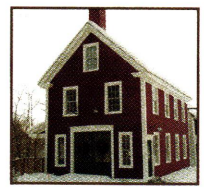

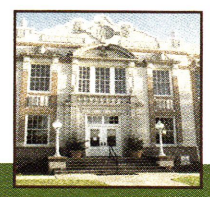

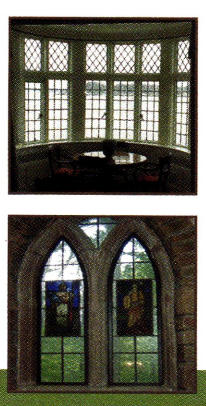

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KEY IN NO. 1963

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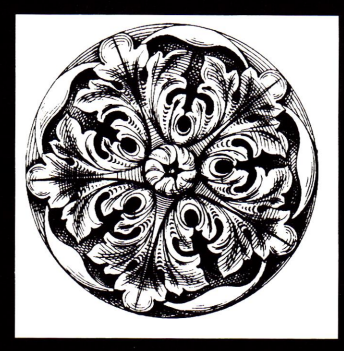

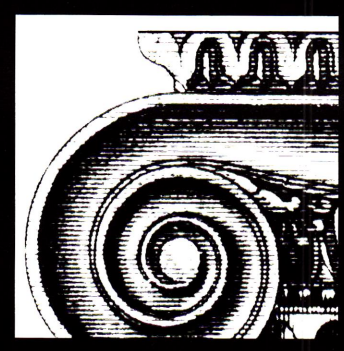

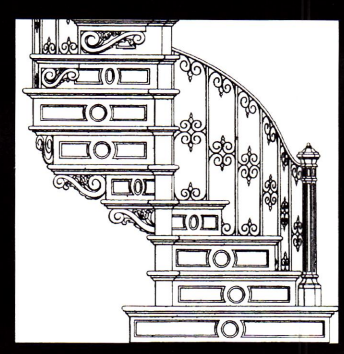

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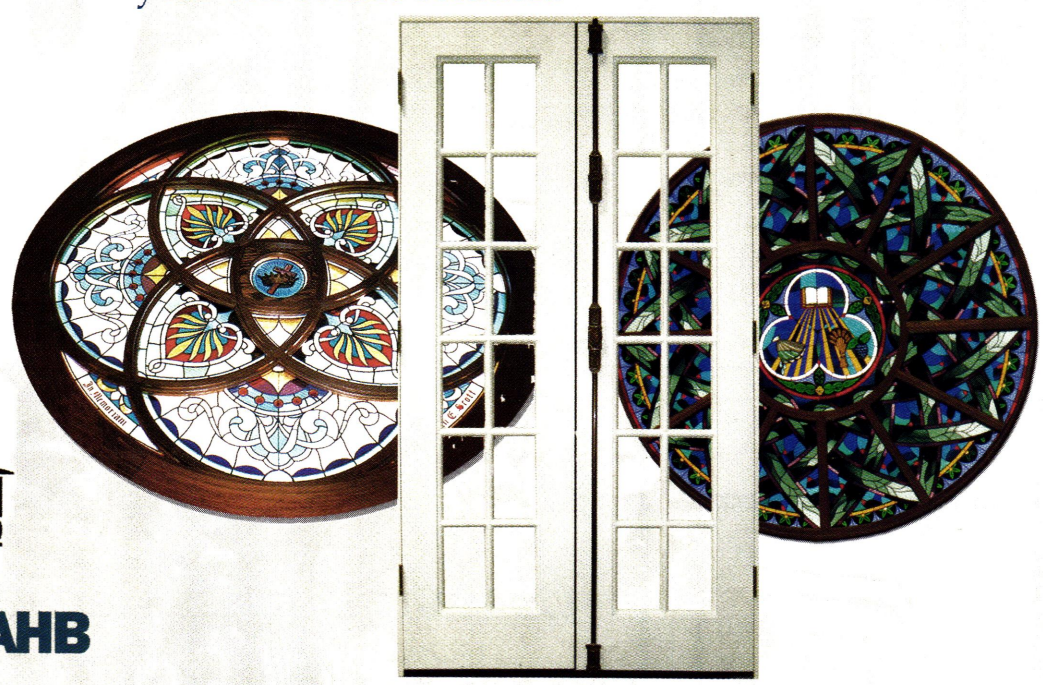

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KEY IN NO. 3003

# Wood Flooring

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

**Antique Lumber Corp.**
617-548-1829; Fax: 617-884-5120
www.antiquelumber.net
Chelsea, MA 02150

Supplier of vintage wood: antique & salvaged timbers & boards; antique wood flooring; random-width & wide-board flooring.

**Key in No. 1457**

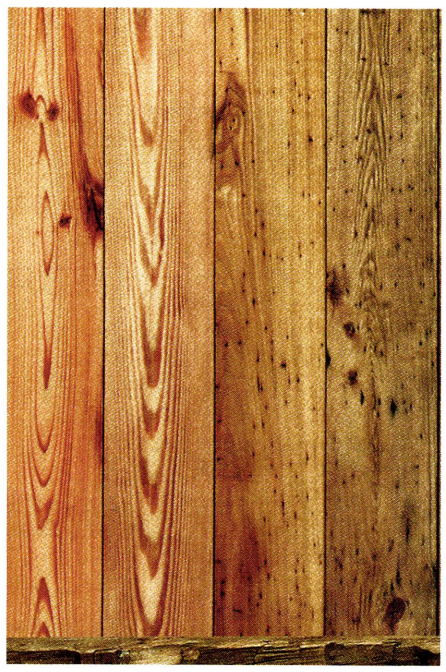
**Chestnut Specialists, Inc.**
860-283-4209; Fax: Same as phone
www.chestnutspec.com
Plymouth, CT 06782

Manufacturer of antique wood for flooring: chestnut, oak, pine & hemlock; hewn barn beams, weathered siding & sheathing planks.

**Call for more information.**

**Country Road Associates, Ltd.**
845-677-6041; Fax: 845-677-6532
www.countryroadassociates.com
Millbrook, NY 12545

Supplier of reclaimed wood: wide board & random width; chestnut, maple, white oak, white pine, heart pine, cherry, elm & walnut; distributor of reclaimed barn siding, hand-hewn beams, paneling & cabinetry.



*Authentic 19th-century reclaimed barn wood from Country Road Associates in pine, hemlock, chestnut and other species can be used as flooring.*

*Thomas D. Osborn Mosaic Hardwood Floors fabricated this four seasons design inlay for a meditation room.*

**Thomas D. Osborn Mosaic Hardwood Floors**
413-532-9034; No fax
www.thefloorist.net
Holyoke, MA 01040

Designer, custom fabricator & installer of mosaic floors: marquetry & inlaid; native & exotic hardwoods; all ¾ in. thick.

**WidePineFlooring.com**
800-471-8715; 401-783-4415
www.widepineflooring.com
West Kingston, RI 02892

Supplier of wood flooring: Eastern White Pine & Southern Long Leaf Heart Pine.

**Key in No. 1967**

*This flooring was supplied by WidePineFlooring.com.*

Chestnut Specialists Inc.
Wideboard/Plank Antique Flooring Remilled from Reclaimed Antique Lumber
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Weathered Barnsiding
Chestnut - Oak - Pine
Dave Wasley 860-283-4209

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- Re-Sawn Heart Pine
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143 Radcliff Rd. Willow Street PA
P: 617-548-1829
www.antiquelumber.net
info@antiquelumber.net

KEY IN NO. 1457

WidePineFlooring.com

KEY IN NO. 1967

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*Or e-mail: dhenao@restoremedia.com.*

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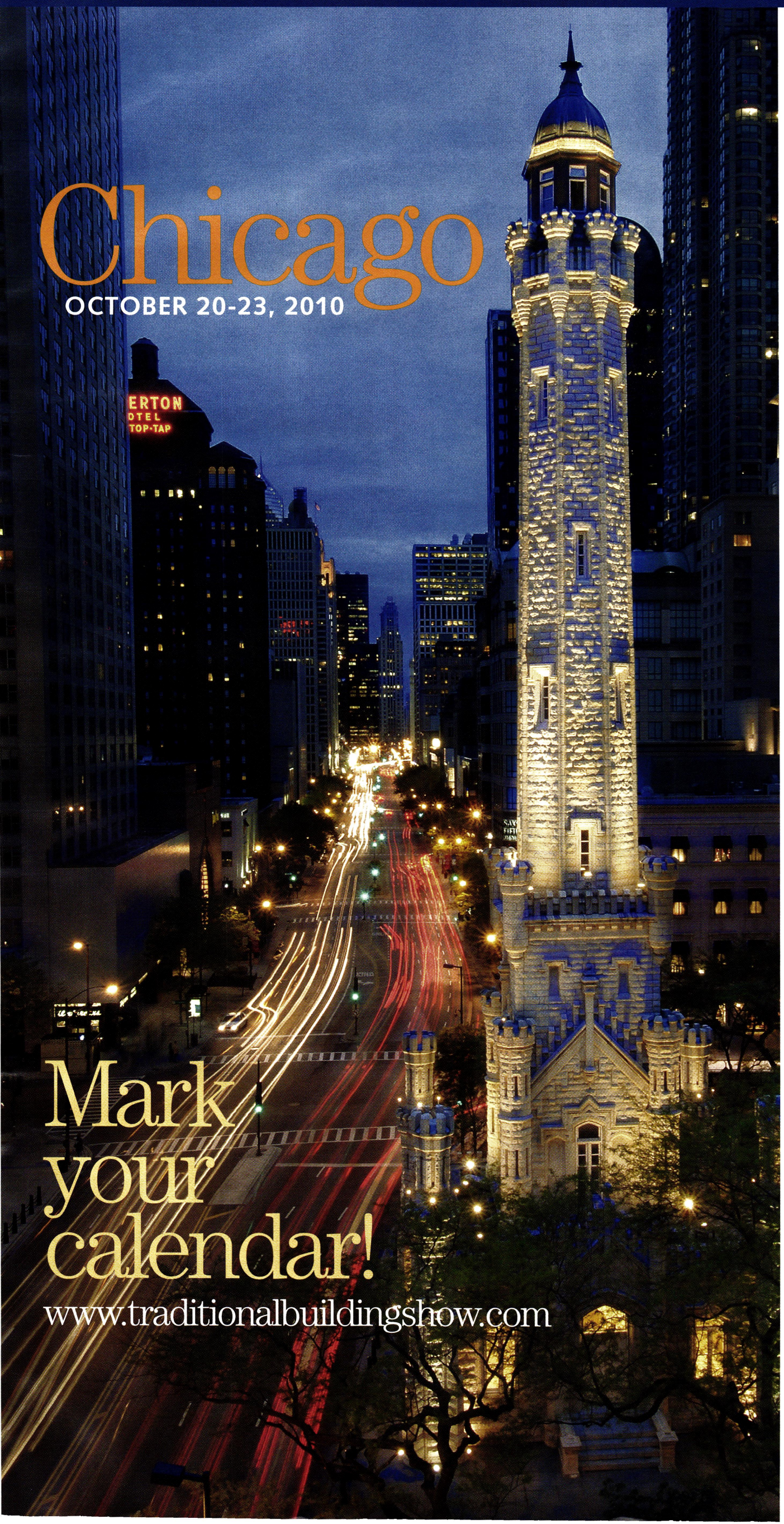


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Washington, DC 20007

45 Main Street, Suite 705
Brooklyn, NY 11201

*Photo: © City of Chicago*

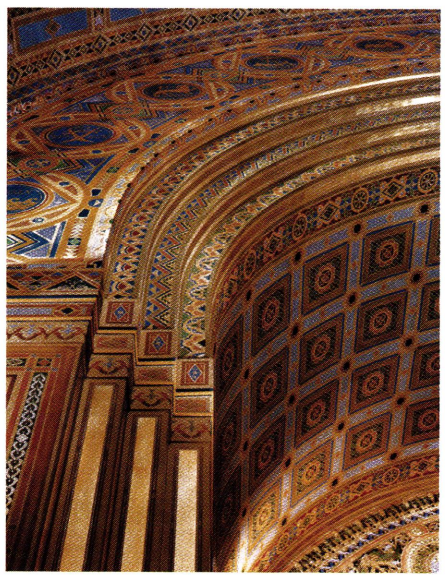
# Decorative Painting

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

### Canning Studios
203-272-9868; Fax: 203-272-9879
www.canning-studios.com
Cheshire, CT 06410

Restorer & designer of decorative finishes, ornamental plaster & wood: historic-paint analysis; plaster consolidation & stabilization; decorative painting, murals, interior & exterior gilding & wood graining; metal & stone cleaning; art glass restoration.

**Key in No. 5100**



*Canning Studios executed the elaborate decorative-painting scheme at the Rodeph Shalom Synagogue in Philadelphia, PA.*

### Conrad Schmitt Studios, Inc.
800-969-3033; Fax: 262-786-9036
www.conradschmitt.com
New Berlin, WI 53151

Creator, conservator & restorer of decorative painting: stained & art glass; ornamental plasterwork; gilding; crystalline etched-glass designs; murals, mosaics & statuary; for public & religious buildings; since 1889.

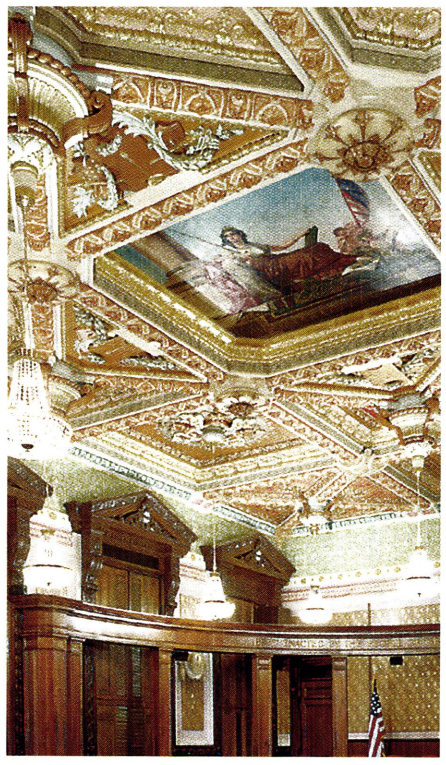
**Key in No. 1839 for ecclesiastical specialties; 8040 for interiors**

*Conrad Schmitt Studios restored the tornado damaged St. Mary Basilica, Natchez, MI; the project involved investigating original finishes and then painting and decorating with 23k gold leaf, glazes, multi-color stencils, tromp l'oeil and free-hand artistry.*

### EverGreene Architectural Arts, Inc.
212-244-2800; Fax: 212-244-6204
www.evergreene.com
New York, NY 10001

Decorative-arts studio: murals, decorative painting, gilding, plaster, wood, metal, stone & mosaics; new design, conservation & restoration; ecclesiastical, institutional, public & commercial projects; offices in NYC & Chicago.

**Key in No. 2460**



*EverGreene Architectural Arts restored the decorative finishes at the former Supreme Court of the Illinois State Capitol.*

### John Tiedemann, Inc.
877-600-2666; Fax: 201-991-3419
www.johntiedemann.com
North Arlington, NJ 07031

Restorer of interior elements: interior painting & design, liturgical renderings, decorative granite flooring, faux finishes, murals & frescoes, gilding, art glass, fine art, paint & plaster analysis, historic analysis & testing.

**Key in No. 1765**

*John Tiedemann used a boom system when restoring the decorative painting at St. Paul's Chapel in New York City.*

### Leo Uhlfelder Co.
914-664-8701; Fax: 914-664-8728
www.uhlfeldergoldleaf.com
Mount Vernon, NY 10553

Supplier of genuine & imitation gold, silver & aluminum leaf: decorative painting & gilding tools, brushes, books, videos & related items; bronze & aluminum powders.

**Key in No. 810**

KEY IN NO. 2460 FOR DECORATIVE PAINTING AND NO. 743 FOR RELIGIOUS PAINTING

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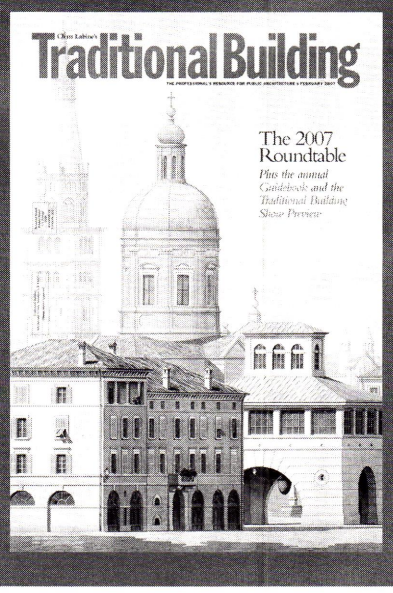


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*With a unified artistic vision, the Studios' experienced staff of artists and craftsmen offer a variety of specialties to be a single source for all of a church's aesthetic needs. Since 1889, the Conrad Schmitt Studios has been dedicated to providing beauty, quality and longevity in every endeavor.*

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Photos on left by: LOF Productions © 2009 Conrad Schmitt Studios Inc.

KEY IN NO. 8040

# Gilding

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

*Canning Studios carried out the gilded stenciling in the Senate Chambers at the Connecticut State Capitol.*

**Canning Studios**
203-272-9868; Fax: 203-272-9879
www.canning-studios.com
Cheshire, CT 06410

Restorer & designer of decorative finishes, ornamental plaster & wood: historic-paint analysis; plaster consolidation & stabilization; decorative painting, murals, interior & exterior gilding & wood graining; metal & stone cleaning; art glass restoration.

**Key in No. 5100**

**Conrad Schmitt Studios, Inc.**
800-969-3033; Fax: 262-786-9036
www.conradschmitt.com
New Berlin, WI 53151

Creator, conservator & restorer of decorative painting: stained & art glass; ornamental plasterwork; gilding; crystalline etched-glass designs; murals, mosaics & statuary; for public & religious buildings; since 1889.

**Key in No. 1839 for ecclesiastical specialties; 8040 for interiors**

*To enhance the appearance of the organ and to coordinate with the new period-inspired painting scheme in this 1873 church, Conrad Schmitt Studios provided decorative painting of the organ pipes; ceiling beams were highlighted with gilded and colored stenciling and new furnishings were also created, using portions of the existing fitments.*

**EverGreene Architectural Arts, Inc.**
212-244-2800; Fax: 212-244-6204
www.evergreene.com
New York, NY 10001

Decorative-arts studio: murals, decorative painting, gilding, plaster, wood, metal, stone & mosaics; new design, conservation & restoration; ecclesiastical, institutional, public & commercial projects; offices in NYC & Chicago.

**Key in No. 2460 for decorative painting; 2678 for plasterwork**

**John Tiedemann, Inc.**
877-600-2666; Fax: 201-991-3419
www.johntiedemann.com
North Arlington, NJ 07031

Restorer of interior elements: interior painting & design, liturgical renderings, decorative granite flooring, faux finishes, murals & frescoes, gilding, art glass, fine art, paint & plaster analysis, historic analysis & testing.

**Key in No. 1765**

**Leo Uhlfelder Co.**
914-664-8701; Fax: 914-664-8728
www.uhlfeldergoldleaf.com
Mount Vernon, NY 10553

Supplier of genuine & imitation gold, silver & aluminum leaf: decorative painting & gilding tools, brushes, books, videos & related items; bronze & aluminum powders.

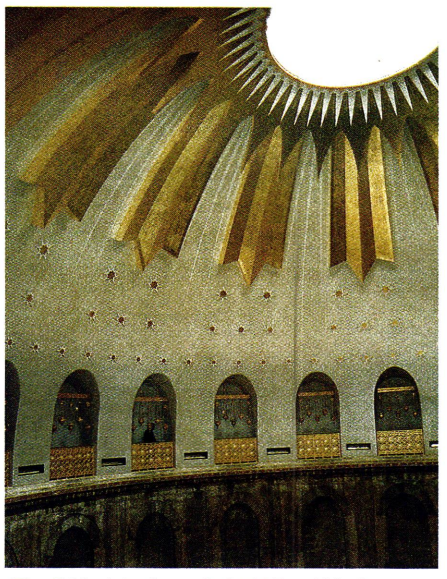
**Key in No. 810**

*Leo Uhlfelder supplies a variety of gilding supplies.*

**The Gilders' Studio, Inc.**
800-937-GILD; Fax: 301-774-5037
Olney, MD 20832
www.gilders.com

Gilder & decorative painter: interior & exterior work, including cupolas, domes & steeples;Venetian plaster; national & international work.

**Key in No. 8980**



*The Gilders' Studio applied 23½k gold leaf to more than 4,000 sq.ft. of new plaster ornament at the Church of the Holy Sepulcher in Jerusalem.*

**Wehrung & Billmeier**
920-459-8206; Fax: 773-472-1544
www.wbgoldleaf.com
Sheboygan, WI 53083

Supplier of gilding materials: metallic, silver & gold leaf from 12-24k, aluminum leaf & imitation gold leaf; products sold in books, packs & rolls.

**Key in No. 8900**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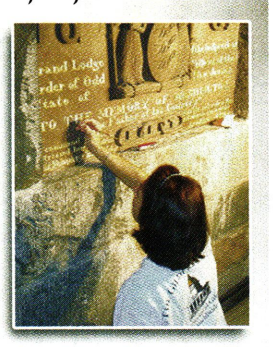
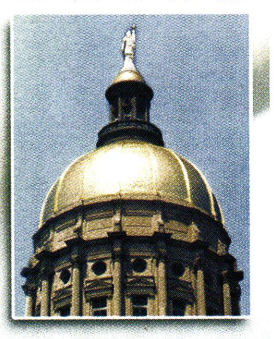
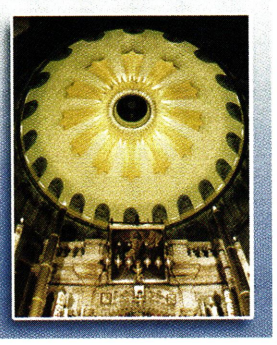


Conservation and Gilding Restoration in the Washington Monument, Washington, D.C.



Preparation and gilding of the 8,000 sq. ft. dome atop The Georgia State Capitol, Atlanta, GA.



Redecoration of the Great Cupola, The Church of the Holy Sepulcher, Jerusalem

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Olney, MD 20830 USA

Bronze and gilding conservation of the 1st Division Memorial, Presidents Park, Washington, DC

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KEY IN NO. 8900

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# Interior Lighting

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### Architectural Archive
800-490-7775; Fax: 818-706-1865
www.a-archive.com
Agoura Hills, CA 91301

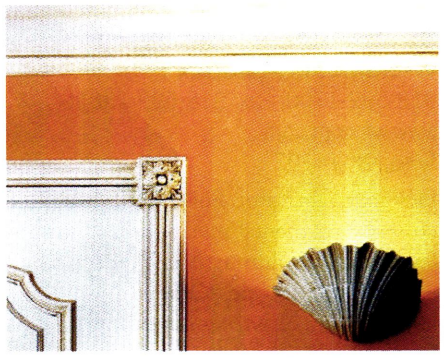
Supplier of lighting fixtures & art glass: custom bronze & alabaster chandeliers; stained-glass panels; antique & reproduction art glass; for residences, hotels, resorts, casinos, restaurants & government projects.

**Key in No. 376**

### Architectural Products by Outwater, LLC
800-835-4400; Fax: 800-835-4403
www.outwater.com
Bogota, NJ 07603

Manufacturer of 65,000+ decorative building products: architectural moldings & millwork, columns, capitals, wrought-iron components, balustrading, door hardware, lighting, ceiling tile, furniture & cabinet components & more.

**Key in No. 1088**



*High-density polyurethane sconces for indirect lighting are part of Outwater's Orac Décor collection.*

### Authentic Designs
800-844-9416; Fax: 802-394-2422
www.authenticdesigns.com
West Rupert, VT 05776

Manufacturer of historical lighting fixtures: chandeliers, lanterns, sconces & table lamps; brass, copper, terne & Vermont maple; Early American & Colonial; CUL/UL listed for wet & damp locations; library binder $15.

**Key in No. 60**

*This chandelier, model #SM-CH-902 from Authentic Designs, is available in both round and oval shapes with 6, 8 or 10 lights.*

### Ball & Ball Lighting
610-363-7330; Fax: 610-363-7639
www.ballandball.com
Exton, PA 19341

Fabricator of historical lighting: chandeliers, sconces, pendants, lanterns & table lamps; Early American & Turn of the Century styles; antique & salvaged originals, new designs, custom work & reproductions; restoration services.

**Key in No. 7660**

*The model #W136-E14 brass electrified chandelier from Ball & Ball Lighting is a reproduction of an 18th-century candle-burning fixture.*

### Cardine Studios
540-439-6460; Fax: 540-439-6462
www.cardinestudios.com
Bealeton, VA 22712

Designer & fabricator of hand-forged metalwork: furnishings, pot racks, lighting, fireplaces, gates, door hardware, straight & curved railings, panels & balusters; columns & capitals; conservatories; iron, bronze, copper, aluminum & stainless; national market.

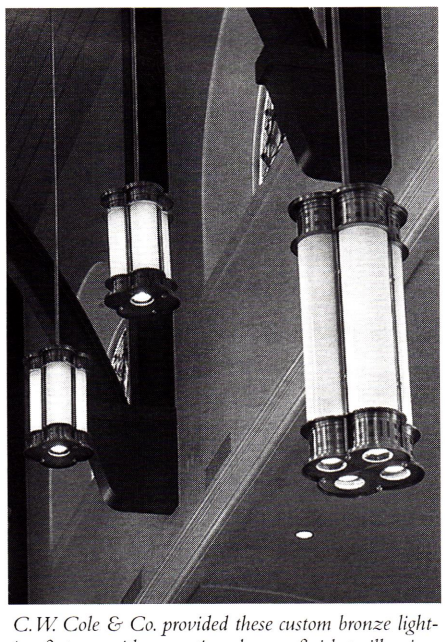
**Key in No. 1867**

*Cardine Studios fabricated this period-style lantern.*

### Cole & Co., C.W.
626-443-2473; Fax: 626-443-9253
www.colelighting.com
South El Monte, CA 91733

Manufacturer of specialty & custom lighting fixtures: interior church lighting; landscape lighting & steplights; fencing; antique refurbishments; for commercial & institutional use.

**Key in No. 488**



*C.W. Cole & Co. provided these custom bronze lighting fixtures with an antique bronze finish to illuminate a church.*

### Coppersmythe, Josiah R.
508-432-8590; Fax: 508-432-8587
www.jrcoppersmythe.com
Harwich, MA 02645

Supplier of handcrafted Early American & Arts & Crafts reproduction lighting fixtures: lanterns, chandeliers, sconces & post lights; copper, brass, tin, wrought iron & wood; catalog $3.

**Call for more information.**

*Josiah R. Coppersmythe's Arts and Crafts lighting collection is constructed of brass or copper and finished to client specifications.*

### Crenshaw Lighting
540-745-3900; Fax: 540-745-3911
www.crenshawlighting.com
Floyd, VA 24091

Manufacturer of decorative lighting fixtures: period & custom designs; historical restoration & reproduction; lighting for worship.

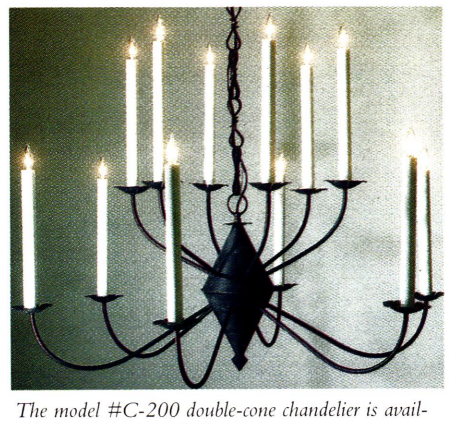
**Key in No. 313**

*This custom chandelier was designed and fabricated by Crenshaw Lighting.*

### Deep Landing Workshop
877-778-4042; Fax: 410-778-4070
www.deeplandingworkshop.com
Chestertown, MD 21620

Manufacturer of custom lighting fixtures: chandeliers, sconces, pendants & lanterns; new designs, historic reproductions & custom work; handcrafted in wood, tin, brass or copper; glass, mica or alabaster shades.

**Key in No. 809**



*The model #C-200 double-cone chandelier is available from Deep Landing.*

*This three-light ceiling-mount lantern from The Federalist is available in diameters of 12½ and 14 in.*

### Federalist, The
203-625-4727; Fax: 203-629-8775
www.thefederalistonline.com
Greenwich, CT 06830

Manufacturer & supplier of 18th-century style lighting fixtures: chandeliers, sconces, lanterns, bell-jar fixtures, table & floor lamps; exterior lanterns; antique, historic reproductions & custom lighting; electric & gas.

### Historical Arts & Casting, Inc.
800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84088

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snow guards, planters & more; iron, bronze, aluminum & steel; restoration services.

**Key in No. 1210**

*This 18-ft. bronze, nickel and gold-plated chandelier was restored by Historical Arts & Casting.*

### House of Antique Hardware
888-265-1038; Fax: 503-233-1312
www.houseofantiquehardware.com
Portland, OR 97232

Manufacturer & supplier of vintage reproduction door, window, shutter, cabinet & furniture hardware & accessories: Federal, Victorian, Colonial Revival, Craftsman & Deco styles; push-button switches & plates; registers & grilles.

**Key in No. 1096**

### Lantern Masters, Inc.
818-706-1990; Fax: 818-706-1988
www.lanternmasters.com
Westlake Village, CA 91362

Custom designer & manufacturer of interior & exterior lighting: chandeliers, pendants, ceiling flushes & sconces; wall, pendant, post & pilaster exterior models; many architectural periods; historical reproductions.

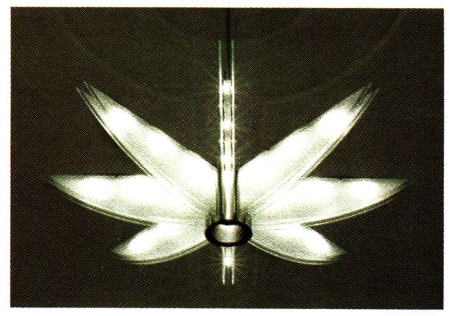
**Key in No. 1239**

*Replica historical fixtures are made by Lantern Masters using traditional techniques.*

### Lighting Nelson & Garrett Inc.
416-463-0050; Fax: 416-463-9882
www.lightingag.com
Toronto, ON, Canada M8V 4E6

Manufacturer of lighting fixtures: many sizes, styles & designs.

**Key in No. 1969**



*Lighting Nelson & Garrett designed and constructed this 5 1/2-in.-dia. plate glass and brushed nickel pendant for a multi-functional worship space at Beth Tikva Synagogue in Toronto, Ontario, Canada.*

### Mills Architectural Lighting
800-268-1526; Fax: 416-463-9882
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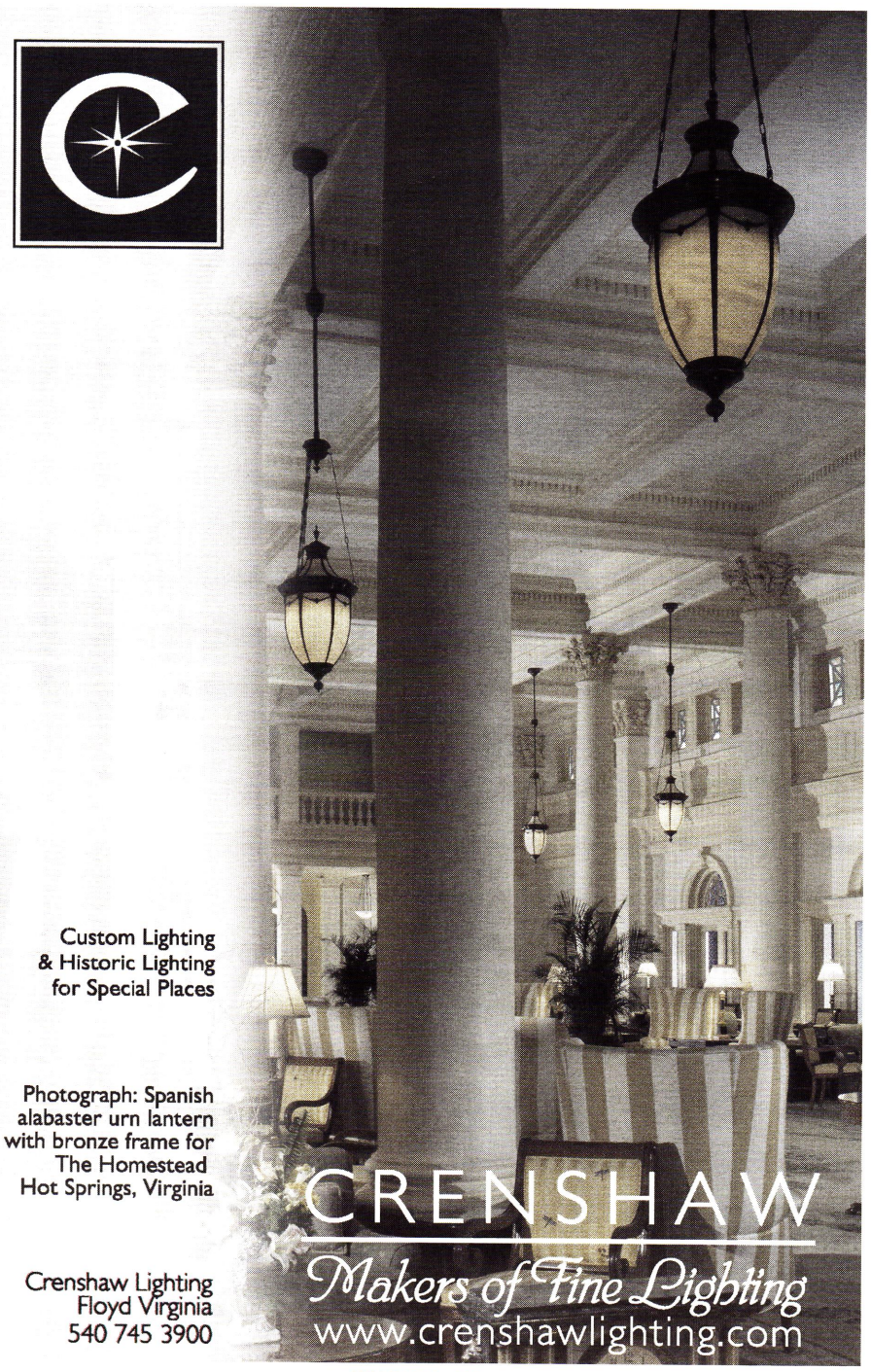

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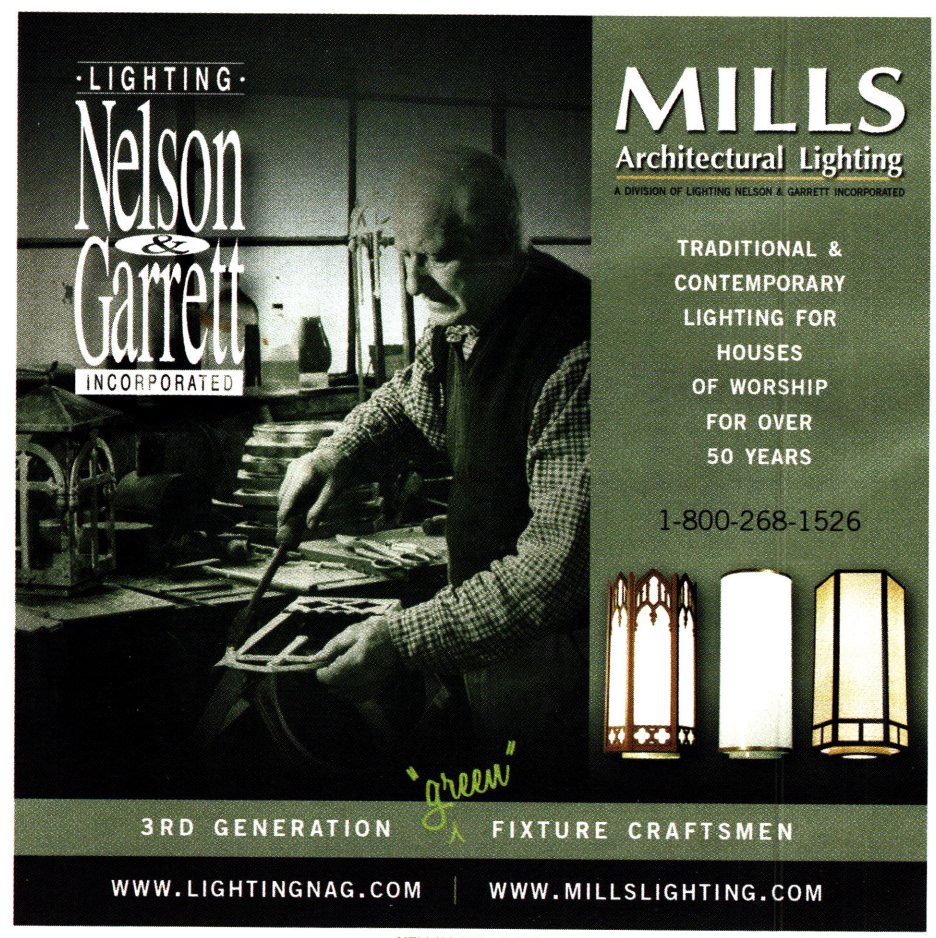

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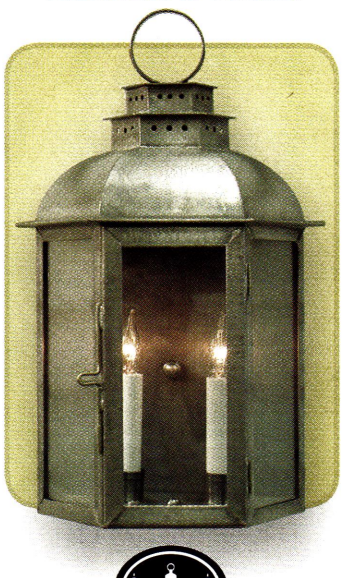

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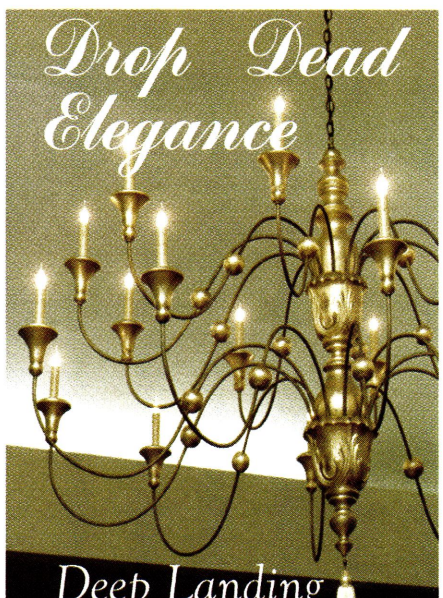

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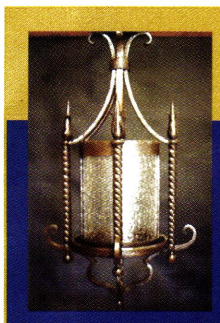
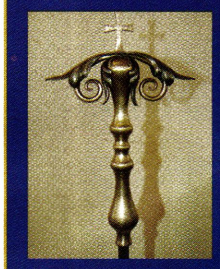
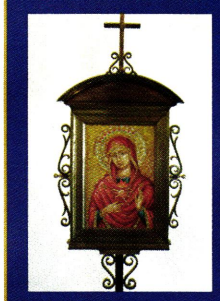
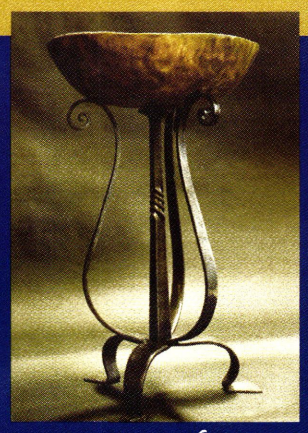
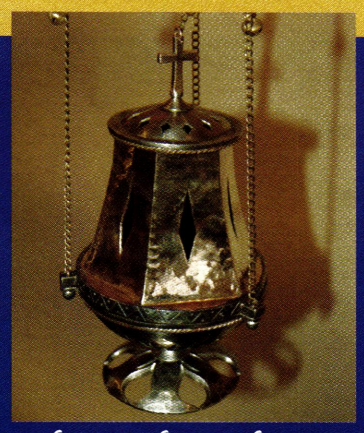

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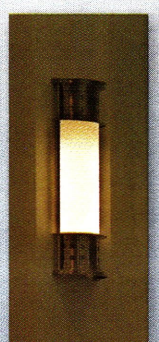

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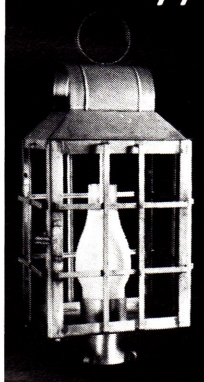

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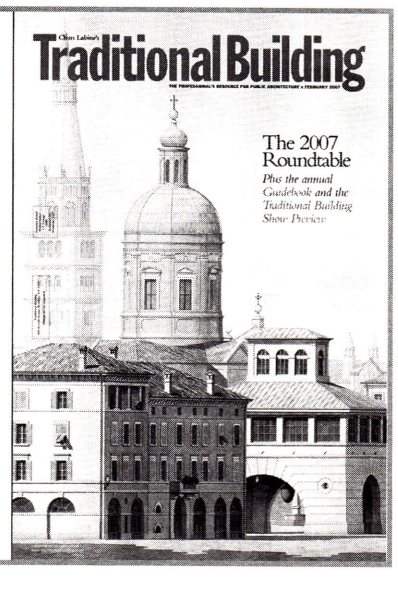


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# Overcoming Challenges

*A firm with a long history of decorative metal exploration and restoration discusses some of the problems and options available.*

**By Conservation Solutions, Inc.**

Architectural metals – a building's jewelry, consisting of ornate grilles, panels, doors, cornices and sculpture – create visual delight through intrinsic and applied finishes. With the exception of iron, which is usually painted, decorative effects on metals are achieved with chemical patination, plating, coating and mechanical texturing to produce a wide variety of colors, patterns and finishes. Over time, however, the artistic intent can become lost through years of exposure to the elements, general wear and uninformed treatment. Restoring these often fleeting original finishes can be challenging as they may leave little evidence behind. These challenges can be met through examination and analysis of the existing finishes on site, in the laboratory, and through archival research.

The intrinsic color and tactile qualities of architectural metals such as bronze, copper, aluminum, gold, lead, nickel, silver, tin, zinc and titanium are frequently enhanced through chemical manipulation and coatings. These finishes are superficial, ephemeral and, when left unprotected or unmaintained, subject to rapid deterioration from exposure or wear. Because patinas and plating on metal are considerably thinner than paint or varnish, they do not accumulate in a series of successive strata. Unlike paints, patinas will oxidize when exposed to the environment. The result is both a physical and chemical change in the patina that leaves no readily observable evidence of the original appearance.

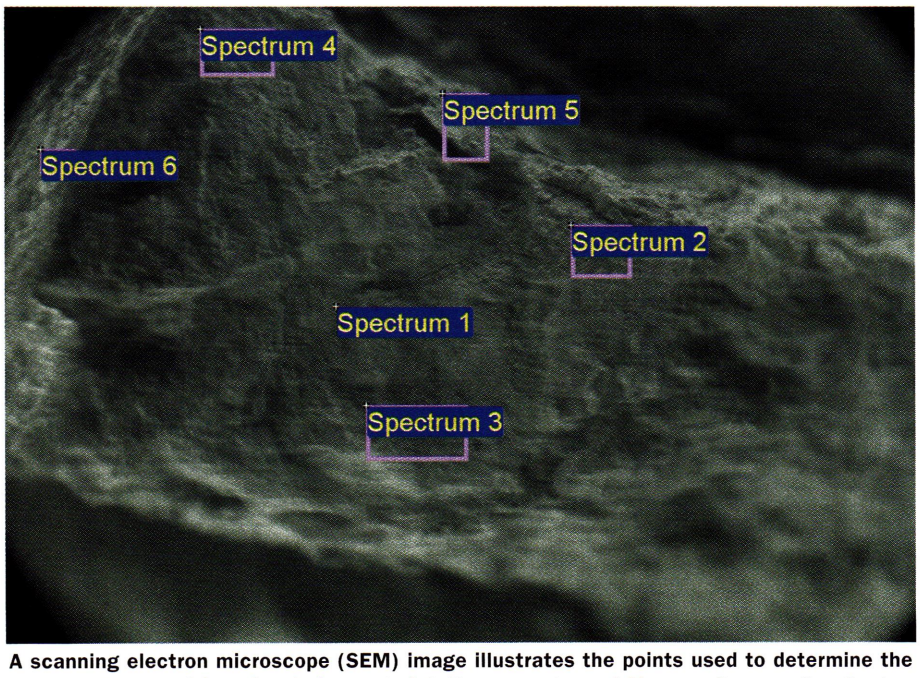
Finishes on building exteriors are often lost to environmental exposure, while interior surfaces are frequently altered by repeated wear or aggressive maintenance. An historic finish may be replaced by a new one that reflects a current trend or a new owner's preference, or a generic metal finish that is easier and more cost effective to maintain. Either way, the elimination of evidence of the historic scheme is the same.

## Looking for Evidence

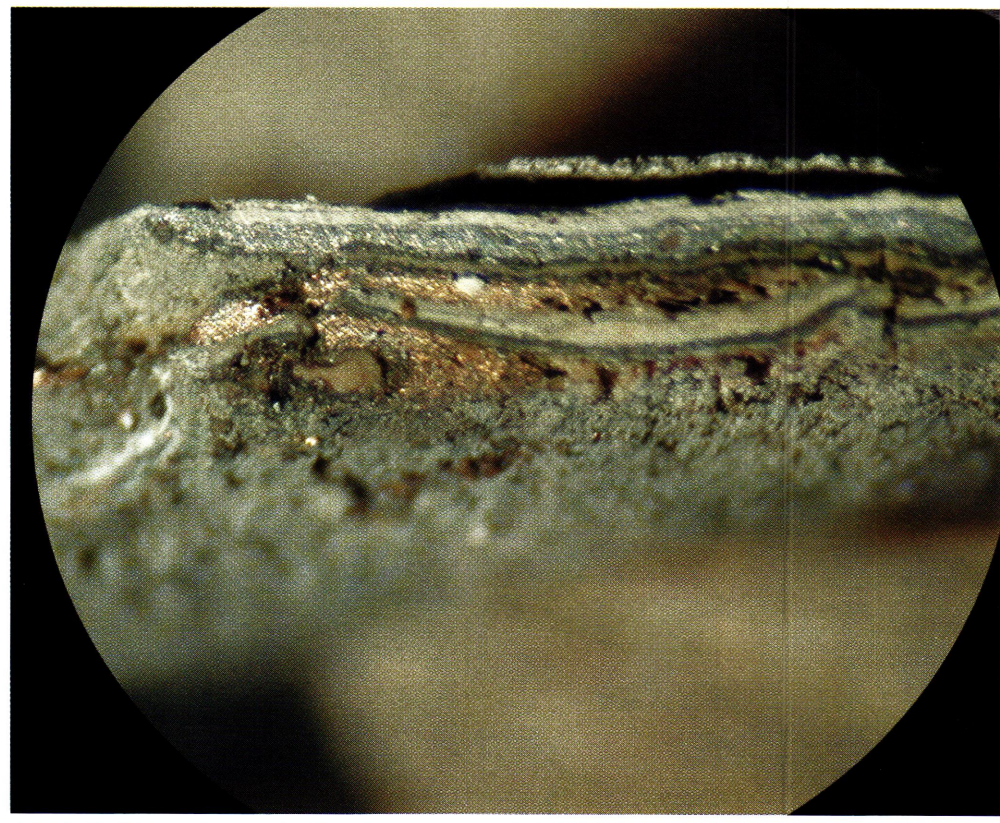
When an owner or building manager decides to preserve or restore decorative metals to their original appearance, the primary challenge is determining what the original finish actually was. At this point, a metals conservator can take on the difficult forensic task of identifying meaningful historic evidence and deciphering original artistic intent to faithfully restore these finishes. A systematic in-situ study of the metal elements combined with a fundamental understanding of the methods and materials used to create the decorative finish lay the foundation for a fruitful investigation.

Original finishes may be found intact in protected or concealed locations. On exteriors, original finishes may have become encapsulated within later construction or under paint. Finishes may also be found under hardware or inside complex assemblages where they are shielded from oxidation, weathering and maintenance. Evidence may exist in peripheral and under-utilized areas, such as closets, pipe chases, above soffits or within stairwells. Light fixtures or other elements that are difficult to reach – and difficult to refinish – may also retain original finishes.

Careful cleaning, disassembly or removal of overlying elements can help reveal the original treatment underneath. Further sampling and targeted laboratory analysis can provide additional insight. Elemental analysis of a sample through scanning electron microscopy/energy dispersive spectroscopy (SEM/EDS) or X-ray fluorescence (XRF) can confirm the identity of the metal substrate and determine alloy composition. Raman spectroscopy can be used to interpret corrosion products and mineral pigments. Where present, samples of coatings may be examined via polarized light microscopy to discern the types of binders and pigments used.




**A scanning electron microscope (SEM) image illustrates the points used to determine the elemental composition of a plating material.** Photo: courtesy of Clemson Conservation Center



**A typical microscopic examination of a minute coating flake reveals evidence of historic gold leaf on a sculpture. This flake had been trapped in a deep crevice and was the only remaining physical evidence of this significant original finish.** All photos: Conservation Solutions, Inc. unless otherwise noted

## Challenges

Once evidence is identified and interpreted, developing a comprehensive restoration plan can still be extremely difficult. Forensic observations usually identify some, but not all, of the original finishes of a building-wide program. In the absence of conclusive evidence, an educated and experienced metals conservator will supplement physical with documentary evidence including plans, specifications, historic photographs and written accounts.

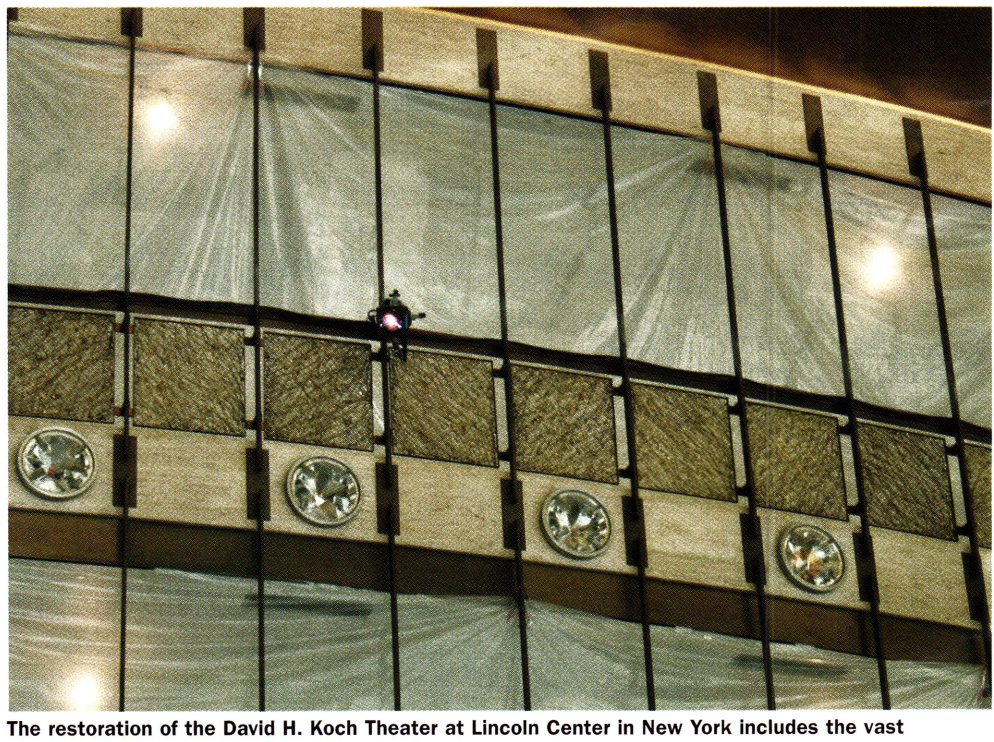
Archival evidence serves as a cross-reference for physical evidence, helping to establish probable timelines of intervention and to aid the reconstruction of likely schemes. This process can be aided by the use of digitally modified photographs and field mock-ups, to illustrate alternative finishes before selecting and specifying a final treatment. Treatment recommendations should consider the desired appearance of the finish versus anticipated levels of exposure and wear, and accommodate protective coatings.

The conservator can work with the client to develop reasonable goals and expectations for the lifespan of the finish, as well as realistic projections of the owner's desire or ability to perform routine maintenance. This may include educating clients about the vulnerability and limitations of metal surfaces, and the finishes that can be applied to them.

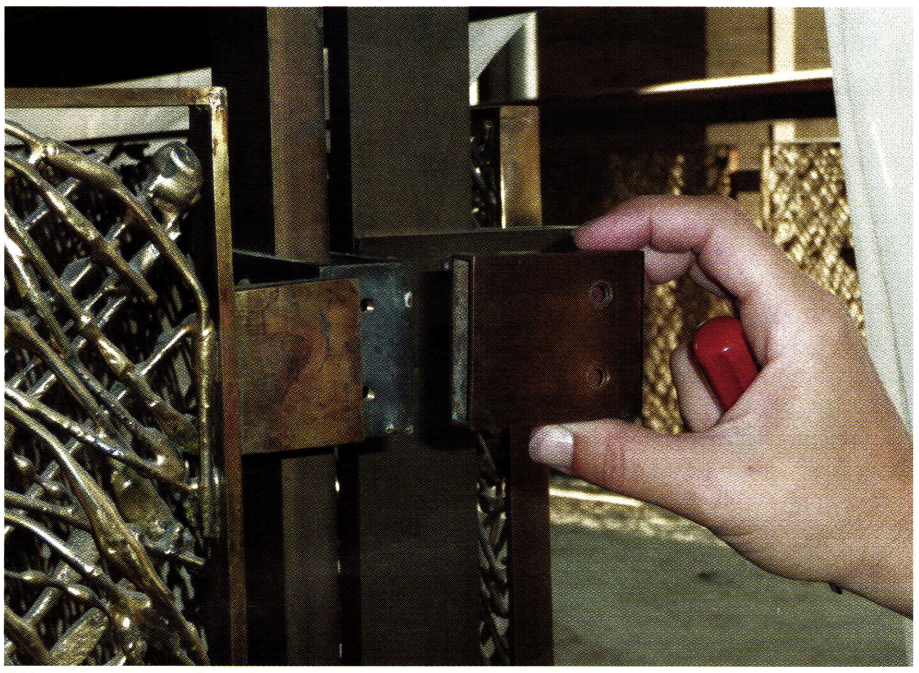
To a building owner, the loss or alteration of an original decorative finish may appear to pose great challenges. However, this challenge can be overcome by working with a competent, sympathetic conservator. The case studies discussed below demonstrate the advantages of engaging a metals conservator early on in a project to facilitate an accurate and responsible restoration plan. The beauty, variety and subtlety displayed by a responsibly preserved or restored decorative metal finish are a satisfying reward to this partnership.

## David H. Koch Theater

The David H. Koch Theater in New York City was designed by Philip Johnson as one of the anchors of Lincoln Center for the Performing Arts, and completed in 1964. Its signature feature is a multi-story series of railings and highly decorative panels circling its atrium.



**The restoration of the David H. Koch Theater at Lincoln Center in New York includes the vast system of decorative panels and railings that encircle the atrium.**



CSI conservators partially disassembled one of the panel groups at the David H. Koch Theater, revealing evidence of non-original, field-applied finishes and illustrating general construction techniques.

A cleaning test at the theater illustrates the corrosion and soiling that have accumulated over the original oxidized metal finish.

Conservation Solutions, Inc. (CSI) attempted to discern the range of metals and historic finishes present, despite their worn condition and complex construction methods. Through careful observation, conservators determined that the panels were fabricated from ferrous wire dipped in brass to create hundreds of individual "splatter" pattern units – no two alike. The railing and framework were fabricated from architectural bronze and treated with a directional sanded and oxidized finish. Cleaning tests using a variety of detergents and solvents confirmed that a protective lacquer was present. Variations in metal color and coating boundaries revealed the likely order in which the panels were assembled and hinted at factory- versus field-applied finishes.

We developed a preservation treatment plan to refresh the existing finishes and remedy minor areas of loss, due to years of wear. These methods included: cleaning using a mild detergent with added corrosion inhibitors; chemical and mechanical corrosion removal; and localized restoration of the dark oxidized finish. The goal was to subtly reintegrate these areas of finish repair back into the overall decorative scheme, enabling Johnson's original intent to continue to shine through.

CSI conservators carefully removed paint layer by layer to reveal the original and subsequent historic finishes on a decorative set of faux-finished grilles at the National Academy of Sciences.

The National Academy of Sciences headquarters in Washington, DC, features an extraordinary use of decorative metals including these monumental windows with decorative spandrel panels, enlivened with a rich verdigris patina.

## The National Academy of Sciences

The National Academy of Sciences in Washington, DC, features an ambitious program of interior and exterior decorative metals ranging from handrails to monumental windows and sculptural spandrel panels. The metals exhibited a wide array of finishes in different colors, patterns and states of deterioration.

The existing metals were studied via probes and by the careful removal of paint, layer by layer. On-site evidence was painstakingly cross-referenced with historic photographs and records. The investigation revealed that the original scheme was a subtle and complex program of artificially weathered patinas in various colors, intermixed with sculptural relief panels in contrasting tones. The result was an amalgamation of finishes that reflected the times and tastes of two significant phases: the original construction, attributed to Bertram Goodhue in 1924; and to Harrison and Abramovitz, who added wings in the 1960s, and also implemented changes to the historic structure.

The treatment plan was designed – and mocked-up – to re-create the decorative finish original to each building phase. All surfaces required general cleaning and surface preparation, including localized removal of corrosion. This was followed by patination, whereby the desired color and pattern of each is carefully developed through successive applications of a dilute chemical solution. Different formulas and application techniques were developed to achieve colors ranging from rich browns and emerald greens to light verdigris. Both lacquer and wax coatings were recommended to prolong the life of the finish. **TB**

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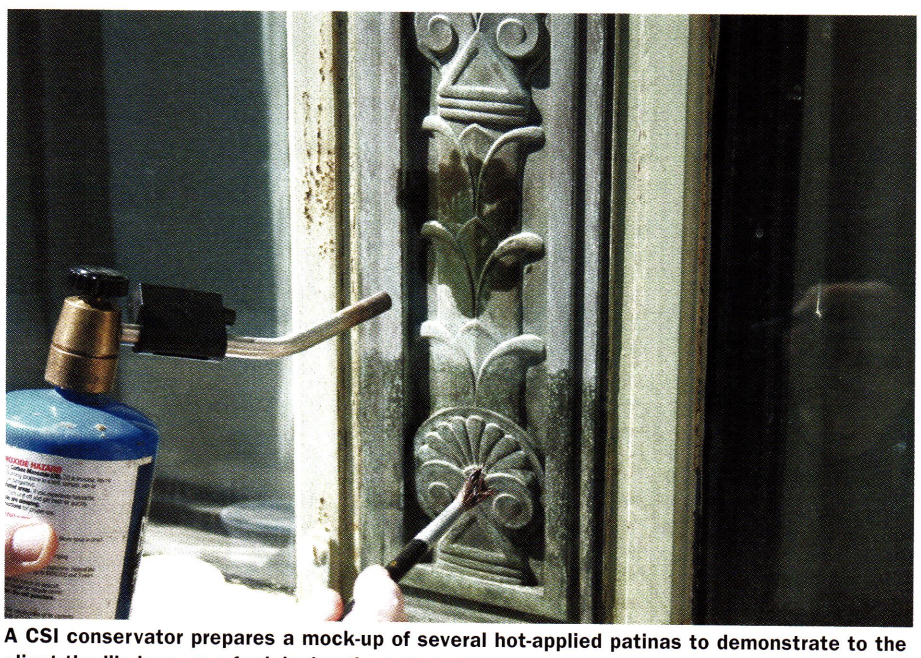
*Established in July 1999, Conservation Solutions, Inc. (CSI) is a full-service conservation firm with extensive expertise in the analysis and treatment of historic metals, stone, brick and concrete masonry. The firm specializes in the fields of conservation analysis and treatment of outdoor sculptures, monuments, historic structures, architectural elements and artifacts. The staff is led by Joseph Sembrat, president; Mark Rabinowitz, vice president; Patty Miller, senior conservator; and Justine Bello, conservator/project manager. More information about Conservation Solutions, Inc. is available at www.conservationsolution.com.*



A CSI conservator prepares a mock-up of several hot-applied patinas to demonstrate to the client the likely range of original patina appearances.

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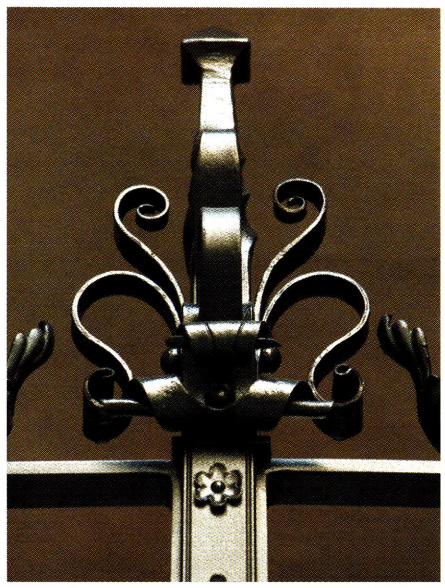

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*Forged Iron Driveway Gate, Wichita, Kansas*

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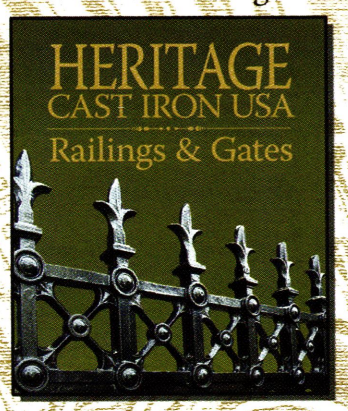


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639 W. 41st Street, Tulsa, OK 74107 • 918-592-1700
www.wmcraft.com
Serving An International Market With Fine Ornamental Metalwork Since 1940

KEY IN NO. 1223

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Visit our online Member Locator to find a NOMMA fabricator in your area.

www.nomma.org

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1535 Pennsylvania Ave.
McDonough, GA 30253
888-516-8585 • Fax: 770-288-2006
nommainfo@nomma.org

NOMMA

KEY IN NO. 5170

www.traditional-building.com
Internet gateway to historical products

Custom Metal Fabrications
Makers of Hand-Forged Ornamental Iron and Bronze

516-333-3562
www.ironcrafters.com

KEY IN NO. 1270

*Schiff Architectural Detail specializes in fences, gates and stair railings.*

**Schiff Architectural Detail, LLC**
617-887-0202; Fax: 617-887-0127
www.schiffarchitecturaldetail.com
Chelsea, MA 02150

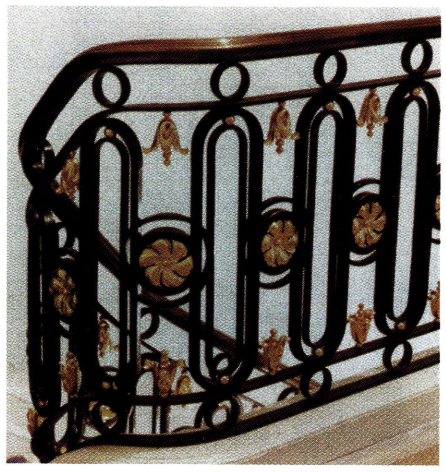
Custom fabricator of metalwork: exterior lamps, lampposts, plaques, fences, fountains, interior & exterior railings & grilles; non-ferrous forged work; machine-shop service; rubber molding & pattern work; historical restoration.

**Key in No. 7730**

**Schwartz's Forge & Metalworks, Inc.**
315-841-4477; Fax: 315-841-4694
www.schwartzsforge.com
Deansboro, NY 13328

Custom fabricator of architectural metalwork: straight, spiral & curved stairs; doors, railings, newel posts, lighting, gates, fences, grilles & fountains; forged bronze, monel steel & stainless steel; historical restoration.

**Key in No. 1218**

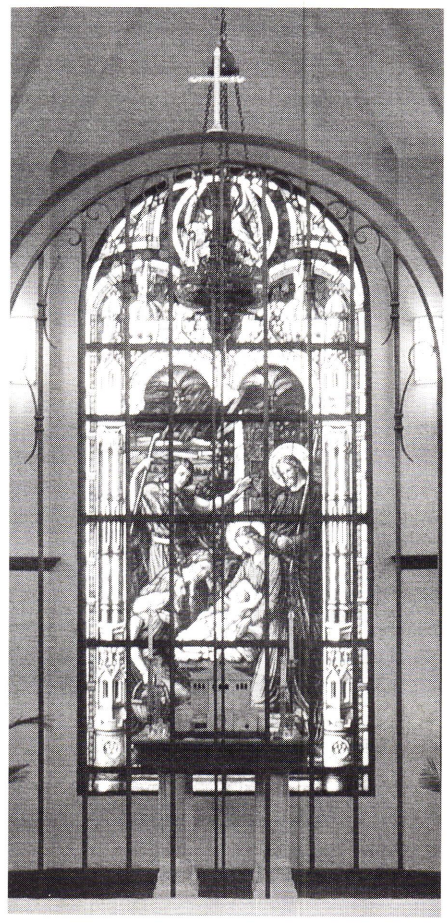


*This stair balustrade, fabricated by Schwartz's Forge & Metalworks, has gilded repousse leaf work and a custom bronze cap rail.*

**Wiemann Metalcraft**
918-592-1700; Fax: 918-592-2385
www.wmcraft.com
Tulsa, OK 74107

Designer, fabricator, finisher & installer of custom ornamental metalwork: railings, fences, gates, columns, balustrades, lighting, grilles, furniture, planters, doors & more; all cast & wrought metal alloys, finishes & architectural styles; since 1940.

**Key in No. 1223**



*Wiemann Metalcraft fabricated the metalwork for St. Therese's in Collinsville, OK.*


METAL MASTERS

DeAngelis IRON WORK INC.

305 Depot Street ▪ P.O. Box 350
South Easton, Massachusetts 02375
(508) 238-4310 ▪ FAX: (508) 238-7757
Outside MA 1-888-ORN-IRON
(1-888-676-4766)

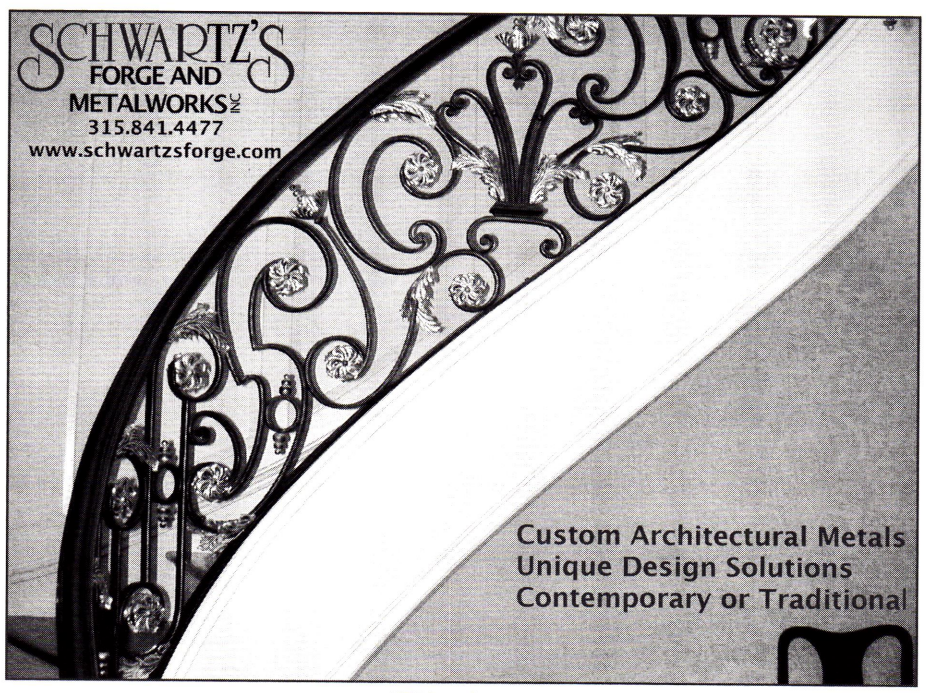
**OBJECTIVE:** Supply and install custom handforged iron handrail.

**CHALLENGES:** Maintaining openness of design while simultaneously ensuring that railing is compliant with local building codes.

**SOLUTION:** DeAngelis Iron Work, Inc.

"QUALITY CUSTOM ORNAMENTAL FABRICATIONS SINCE 1954"

KEY IN NO. 1023




KEY IN NO. 1218

KEY IN NO. 2220

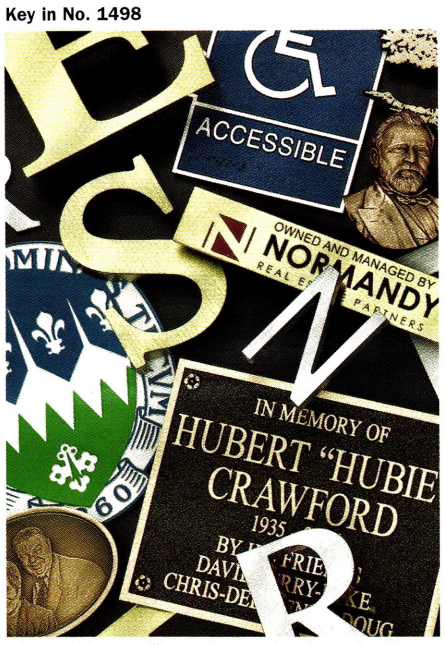
# Metal Castings

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

### A.R.K. Ramos
800-725-7266; Fax: 405-232-8516
www.arkramos.com
Oklahoma City, OK 73109

Supplier of plaques, letters & signage: cast & etched aluminum, cast brass & bronze; full line of interior & exterior ADA signage; cut graphics & reverse channel letters in aluminum, brass, bronze & stainless steel.

**Key in No. 1498**

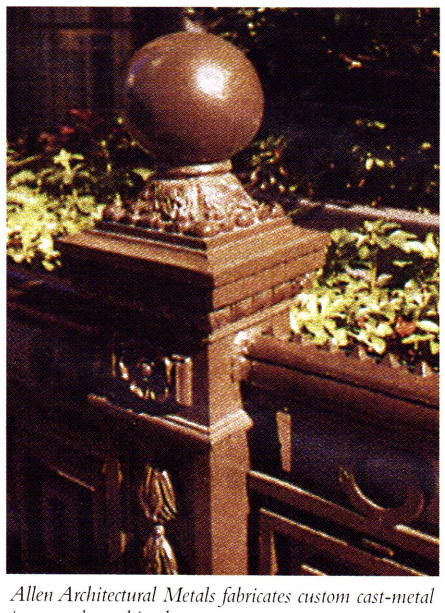



*A.R.K. Ramos offers a wide selection of cast aluminum, brass and bronze letters and plaques.*

### Allen Architectural Metals, Inc.
800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161

Manufacturer of ornamental metal: street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.

**Key in No. 1005**



*Allen Architectural Metals fabricates custom cast-metal items such as this planter.*

### Architectural Products by Outwater, LLC
800-835-4400; Fax: 800-835-4403
www.outwater.com
Bogota, NJ 07603

Manufacturer of 65,000+ decorative building products: architectural moldings & millwork, columns, capitals, wrought-iron components, balustrading, door hardware, lighting, ceiling tile, furniture & cabinet components & more.

**Key in No. 1088**

### Ball & Ball Hardware
610-363-7330; Fax: 610-363-7639
www.ballandball.com
Exton, PA 19341

Custom manufacturer & supplier of ornamental metalwork & hardware: door, window, shutter, gate & furniture hardware; fireplace tools; wrought iron, steel, aluminum, bronze, brass, copper & cast iron; custom reproductions.

**Key in No. 2930**

### Bill's Custom Metal Fabrications
516-333-3562; No fax
www.ironcrafters.com
Westbury, NY 11590

Manufacturer of ornamental metalwork: railings, furniture, fireplace doors, mantels, hardware & candelabras; handcrafted & hand forged.

**Key in No. 1270**

*Bill's Custom Metal fabricated the metalwork for the Parish of Resurrection & Ascension in Queens, New York.*

### Campbellsville Industries, Inc.
800-467-8135; Fax: 270-465-6839
www.cvilleindustries.com
Campbellsville, KY 42718

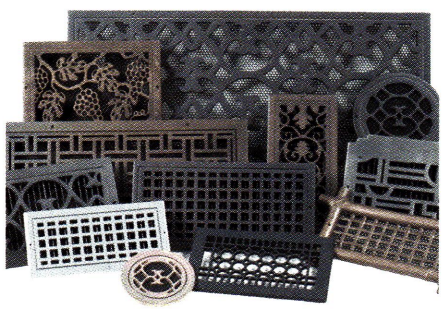
Manufacturer & installer of architectural metalwork: steeples, columns, cupolas, street clocks, railings, balustrades, finials, domes, weathervanes & louvers; aluminum, copper, zinc & lead-coated copper.

**Key in No. 2730**

### Classic Grills
760-213-7136; Fax: 760-749-7136
www.classicgrills.com
Valley Center, CA 92082

Fabricator of grilles, registers & vent covers: bronze or aluminum; Renaissance, Victorian & Art Deco styles; stock & custom; fireplace dampers.

**Key in No. 1973**



*Classic Grills fabricated these period-style grilles.*

### DeAngelis Iron Work, Inc.
888-676-4766; Fax: 508-238-7757
www.deangelisiron.com
South Easton, MA 02375

Custom fabricator & installer of ornamental metalwork: fences, gates, columns, capitals, benches, stairs & more; cast & wrought iron, bronze, brass, aluminum, stainless steel & more; cresting; grilles.

**Key in No. 1023**

### Forerunner Creations
718-209-7030; Fax: 718-513-3737
www.forerunnercreations.com
Brooklyn, NY 11236

Custom foundry shop: specializes in historic landmark metalwork; railing, fencing, cornices, handrails & more; stainless steel, brass, bronze, copper, aluminum, cast iron; restoration, replication & new designs.

*Forerunner Creations produced and installed this historically styled railing.*

### Heritage Cast Iron USA
877-855-4766; Fax: 918-592-2385
www.heritagecastironusa.com
Tulsa, OK 74107

Supplier & distributor of traditional 19th-century inspired cast-iron gates, fences & railings: seven collections include pre-hung driveway gates, garden gates, modular fences, posts & fittings; CAD files on request; most products in stock for immediate delivery.

**Key in No. 1968**

*The Gilberton Collection from Heritage Cast Iron USA features richly detailed Victorian fence and gate designs from the late 19th century.*

### Herwig Lighting
800-643-9523; Fax: 479-968-6422
www.herwig.com
Russellville, AR 72811

Designer & manufacturer of cast metalwork: pendant lanterns, street lighting, posts, custom outdoor lighting, clocks, benches, bollards, custom plaques & signs, antique fence posts & more; aluminum & bronze; handcrafted.

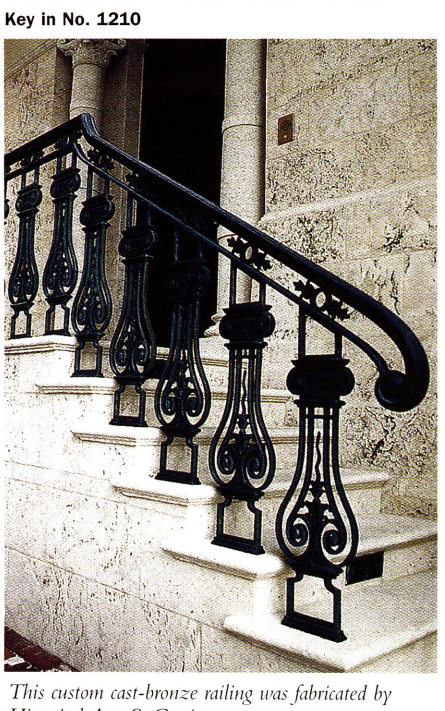
**Key in No. 9130**

*This 16½-ft. cast-aluminum lantern post was reproduced by Herwig Lighting from an original photograph of fixtures at a train depot.*

### Historical Arts & Casting, Inc.
800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84088

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snowguards, planters & more; iron, bronze, aluminum & steel; restoration services.

**Key in No. 1210**



*This custom cast-bronze railing was fabricated by Historical Arts & Casting.*

### House of Antique Hardware
888-265-1038; Fax: 503-233-1312
www.houseofantiquehardware.com
Portland, OR 97232

Manufacturer & supplier of vintage reproduction door, window, shutter, cabinet & furniture hardware & accessories: Federal, Victorian, Colonial Revival, Craftsman & Deco styles; push-button switches & plates; registers & grilles.

**Key in No. 1096**

### Kayne & Son Custom Hardware
828-667-8868; Fax: 828-665-8303
www.customforgedhardware.com
Candler, NC 28715

Manufacturer of forged- & cast-metal hardware: strap, H, HL, butterfly & butt hinges; thumb-latch locksets, gate hardware, shutter dogs & more; fireplace tools; bathroom accessories & kitchen equipment; restoration; catalog $5.

**Call for more information.**

**Michigan Ornamental Metals**
201-945-4930; Fax: 201-945-4931
www.michiganornamental.com
Ridgefield, NJ 07657

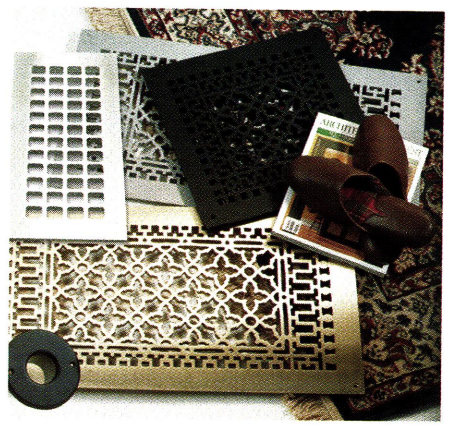
Custom fabricator of metal ornament: columns, capitals, rosettes, wreaths, cornices & ceilings; cupolas, domes, gutters, finials, leaders & leader boxes; stamped & pressed sheet metal; replications & historic reproductions.

**Key in No. 9520**

**Reggio Register Co., The**
800-880-3090; Fax: 978-870-1030
www.reggioregister.com
Leominster, MA 01453

Manufacturer of grilles & registers: for forced-air & high-velocity systems; cast iron, brass, aluminum, zinc & wood; handcrafted to last for generations.

**Key in No. 5810**



*Brass, iron and aluminum registers are available from Reggio in many traditional styles.*

**Schiff Architectural Detail, LLC**
617-887-0202; Fax: 617-887-0127
www.schiffarchitecturaldetail.com
Chelsea, MA 02150

Custom fabricator of metalwork: exterior lamps, lampposts, plaques, fences, fountains, interior & exterior railings & grilles; non-ferrous forged work; machine-shop service; rubber molding & pattern work; historical restoration.

**Key in No. 7730**

**Wiemann Metalcraft**
918-592-1700; Fax: 918-592-2385
www.wmcraft.com
Tulsa, OK 74107

Designer, fabricator, finisher & installer of custom ornamental metalwork: railings, fences, gates, columns, balustrades, lighting, grilles, furniture, planters, doors & more; all cast & wrought metal alloys, finishes & architectural styles; since 1940.

**Key in No. 1223**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Tulsa, Oklahoma 74107
Email: sales@heritagecastironusa.com

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KEY IN NO. 1968


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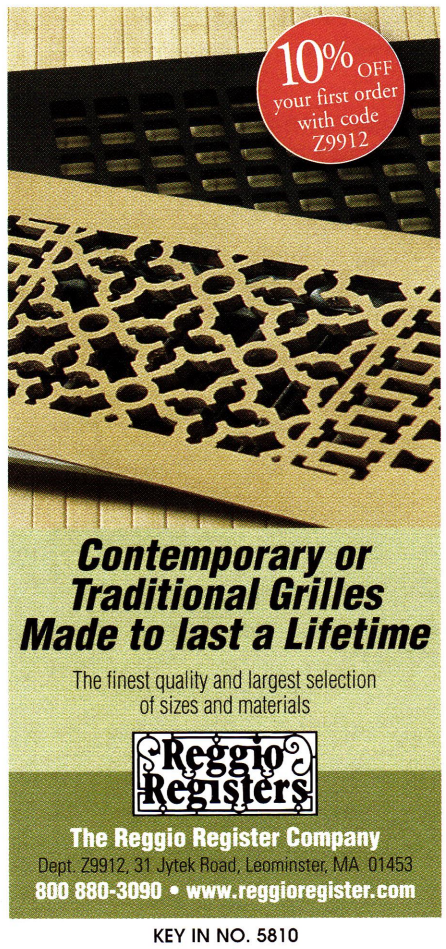


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The finest quality and largest selection of sizes and materials

Reggio Registers

**The Reggio Register Company**
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KEY IN NO. 5810


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WWW.HERWIG.COM
HERWIGLIGHTING@HOTMAIL.COM
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FAX: 479-968-6422


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KEY IN NO. 1973


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ARCHITECTURAL DETAIL

Fine Ornamental Metal Fabrication
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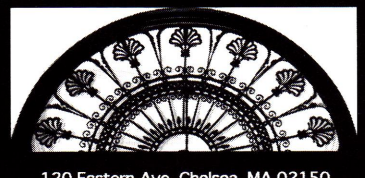


120 Eastern Ave. Chelsea, MA 02150
Tel: (617) 887-0202 Fax: (617) 887-0127
www.schiffarchitecturaldetail.com


KEY IN NO. 7730

# Metal Roofing

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

**Arthur Vincent Company**
845-353-0348; Fax: 845-353-4284
16 S. Franklin Street
Nyack, NY 10960

General contractor: more than 40 years experience, renovating, restoring & waterproofing religious properties in the northeast US; roofing, bricks & mortars, cupolas & more.

**Key in No. 1987**

**Baschnagel Brothers**
718-767-1919; Fax: 718-767-5141
www.baschnagel.com
Whitestone, NY 11357

Manufacturer & installer of metal roofing: fabrication & installation of all types of ornamental copper gutters, leaders & more; metal repairs & restorations; slate roofing; cupolas; works with New York Landmarks Conservancy.

**Key in No. 1012**

**Campbellsville Industries, Inc.**
800-467-8135; Fax: 270-465-6839
www.cvilleindustries.com
Campbellsville, KY 42718

Manufacturer & installer of architectural metalwork: steeples, columns, cupolas, street clocks, railings, balustrades, finials, domes, weathervanes & louvers; aluminum, copper, zinc & lead-coated copper.

**Key in No. 2730**

**Custom Copper Designs**
405-417-6464; Fax: 405-793-9464
www.customcopperdesigns.com
Newalla, OK 74857

Manufacturer of custom copper architectural elements: cupolas, finials, cresting, gutters, louvers & weathervanes.

**Key in No. 1857**

**Follansbee**
800-624-6909; Fax: 304-527-1269
www.follansbeeroofing.com
Follansbee, WV 26037

Manufacturer of three roofing products: TERNE II, a zinc/tin-coated carbon steel; TCS II, a zinc/tin-coated stainless steel; New Klassic Kolors, TERNE II pre-painted with a Kynar 500 or Hylar 5000 Fluropon paint finish.

**Heather & Little Limited**
800-450-0659; Fax: 905-475-9764
www.heatherandlittle.com
Markham, ON, Canada L3R 0H1

Fabricator & supplier of historical sheet-metal roofing & specialty architectural sheet metal: finials, cornices, leader heads, cresting, metal shingles, pressed-metal siding, cupolas, steeples, domes, reproductions; capitals; Kalemein & lot-line metal windows & doors.

**Key in No. 2470**

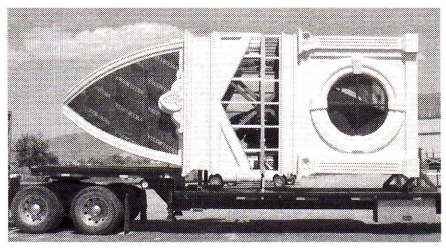


*Heather & Little restored the copper roofing for Toronto's Old City Hall.*

**Munns Mfg., Inc.**
435-257-5673; Fax: 435-257-3842
www.munnsmfg.com
Garland, UT 84312

Manufacturer of aluminum steeples, pinnacles, spires, cupolas, weathervanes & towers: variety of styles & designs; custom copper & aluminum dormers.

**Key in No. 1356**



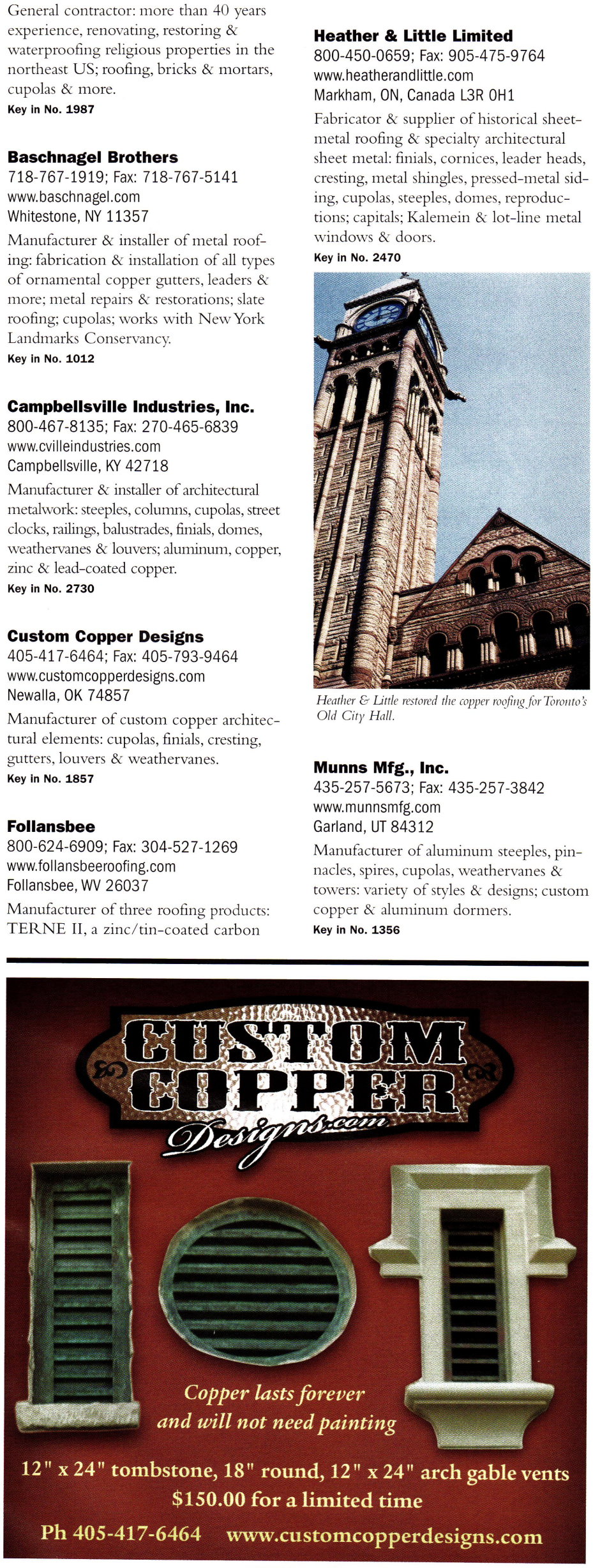
*This pre-fabricated metal cupola, built by Munns Mfg., is on its way to the historic County Courthouse in Goliad, TX.*

**NIKO Contracting Co., Inc.**
412-687-1517; Fax: 412-687-7969
www.nikocontracting.com
Pittsburgh, PA 15213

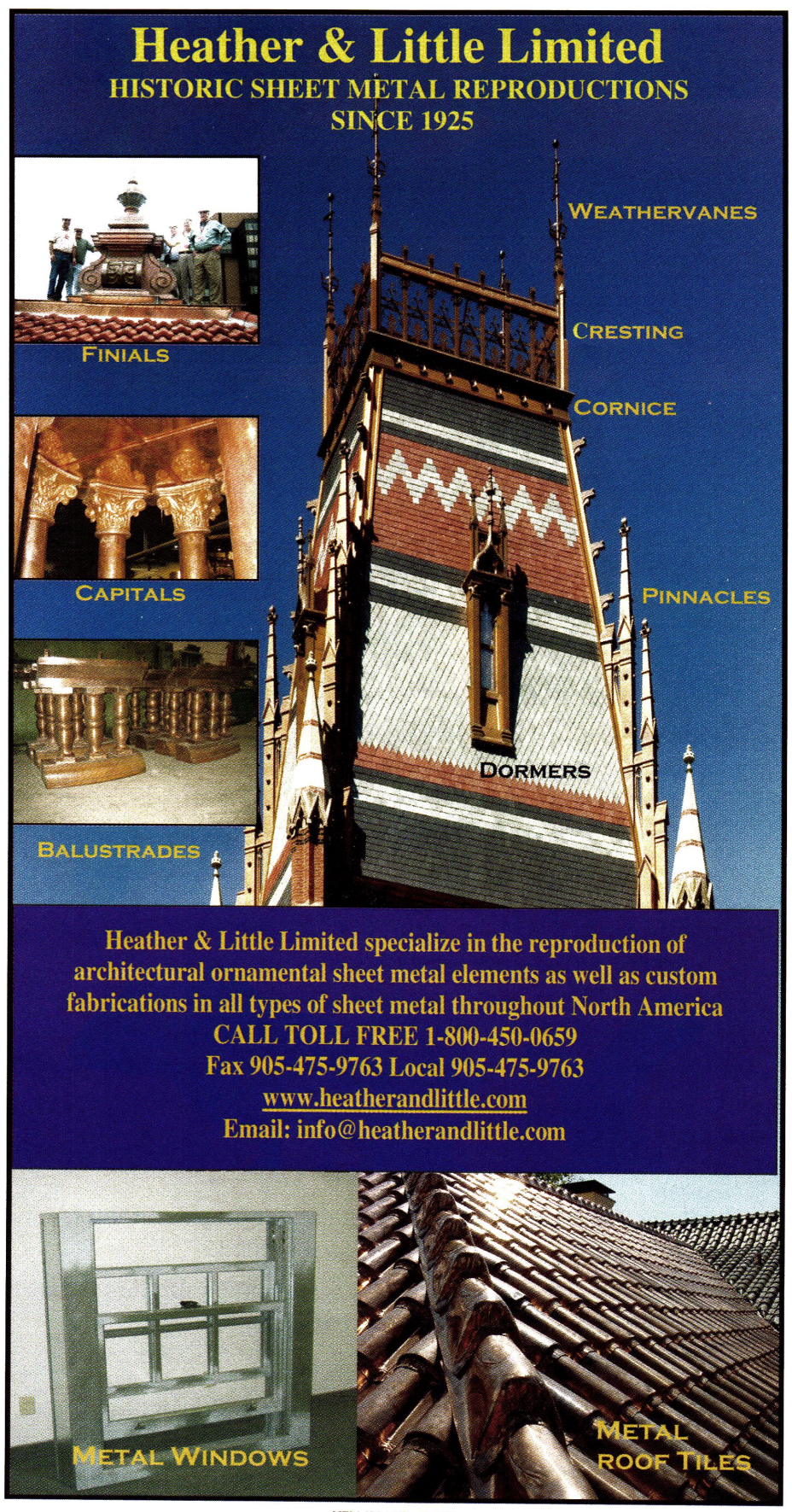
Custom fabricator & contractor of sheet-metal & roofing: slate, tile & other roofing; storefronts, cornices, cupolas, domes, steeples, snowguards & leader heads; copper, lead-coated copper, zinc & stainless steel; metal ceilings.

**Key in No. 8300**

*NIKO fabricated the copper dormers and mansard roof and also installed the copper penthouse for this NYC building.*


KEY IN NO. 1857

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- **Landmarks**
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- **Commercial**

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WHITESTONE, NY 11357-1817
WWW.BASCHNAGEL.COM
SALES@BASCHNAGEL.COM

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CUSTOM FABRICATION
•
HISTORIC RESTORATION
•
PRESSED METAL CEILINGS

NKO CONTRACTING CO.

*For information on custom fabrication and/or installation contact:*
Phone (412) 687-1517
3434 Parkview Ave., Pittsburgh, PA 15213

KEY IN NO. 8300

When
**contacting**
companies you've seen in the issue, please
**tell them**
you saw their listing in
**Traditional Building.**

restoration & new construction

*architects* *developers*
*contractors* *landscape architects*
*building owners* *building managers*
*facilities managers* *preservation planners*
*interior designers* *restoration consultants*

what you need to know
**www.traditional-building.com**

**BuildingPort.com**

Bringing Together Information About
Building Products and Materials

## Introducing BuildingPort.com

BuildingPort.com is the latest addition to Restore Media's robust network of Web sites serving people in the fields of building design and construction (**Traditional-Building.com**, **Period-Homes.com** and **tradwebdirectory.com**).

It has several key features:

- It's a portal site, loaded with **connections** to the broad field of building design and construction.
- It's packed with **deep and rich information** on both commercial and residential design and construction, everything from feature articles to product reviews to links to relevant Web sites.
- It has 26 categories of information and hundreds of sub-categories, all of which make it **easier to match search terms** to usable content on the site.
- It has on-point search tools that **deliver targeted results** visitors are looking for the first time around.
- It contains information on more than **5,000 suppliers** of building products, materials, and services.

*You'll find what you need. Come see for yourself.*

**www.buildingport.com**

# Tile Roofing

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

**Arthur Vincent Company**
845-353-0348; Fax: 845-353-4284
16 S. Franklin Street
Nyack, NY 10960

General contractor: more than 40 years experience, renovating, restoring & waterproofing religious properties in the northeast US; roofing, bricks & mortars, cupolas & more.

**Key in No. 1987**

**Boston Valley Terra Cotta**
888-214-3655; Fax: 716-649-7688
www.bostonvalley.com
Orchard Park, NY 14127

Supplier of architectural terra-cotta products: roof tile & Terraclad; columns, capitals, cornices, balustrades, garden sculpture & chimneys; standard & custom shapes & colors; replacements & new designs.

**Key in No. 160**

*The terra-cotta elements of this temple in Baltimore, MD, including the roof tile, were restored by Boston Valley Terra Cotta.*

**Keymer Tiles**
615-571-9958; Fax: Same as phone
www.keymertiles.com
Burgess Hill, W. Sussex, UK RH15 0LZ

Manufacturer of handmade clay roof tile: plain, ornamental, ridge, hip & valley; custom colors.

**Ludowici Roof Tile, Inc.**
800-945-8453; Fax: 740-342-0025
www.ludowici.com
New Lexington, OH 43764

Manufacturer of clay tile roofing: many patterns, finishes & colors; Imperial ceramic slate tile; good freeze/thaw properties; low moisture absorption; 75-year limited warranty; restoration & new construction.

**Key in No. 2760**

*Clay roofing tile from Ludowici was used to re-roof this historic building.*

**NIKO Contracting Co., Inc.**
412-687-1517; Fax: 412-687-7969
www.nikocontracting.com
Pittsburgh, PA 15213

Custom fabricator & contractor of sheet-metal & roofing: slate, tile & other roofing; storefronts, cornices, cupolas, domes, steeples, snowguards & leader heads; copper, lead-coated copper, zinc & stainless steel; metal ceilings.

**Key in No. 8300**

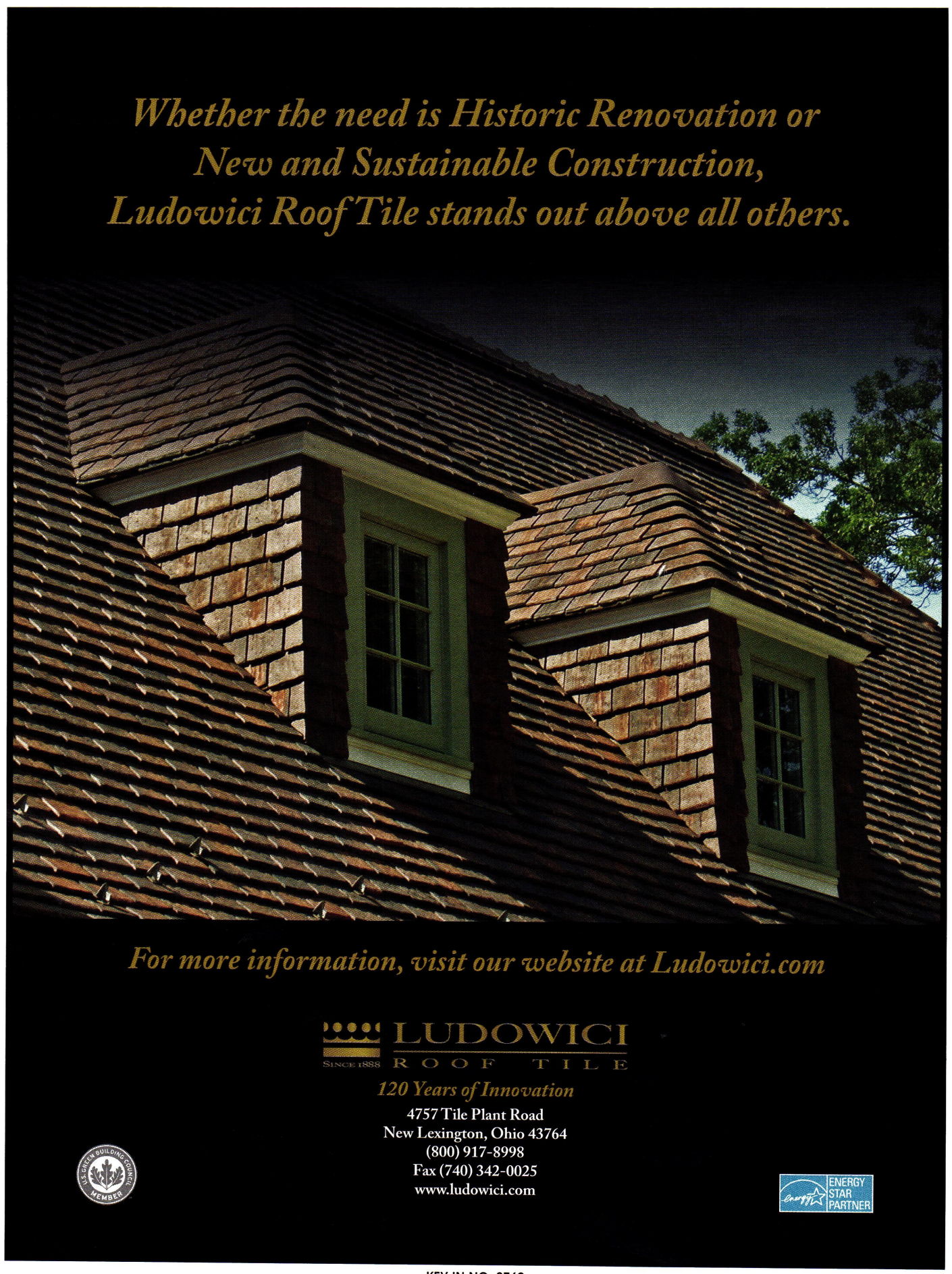
**Vande Hey Raleigh Mfg.**
800-236-8453; Fax: 920-766-0776
www.vrmtile.com
Little Chute, WI 54140

Manufacturer of architectural concrete & slate roofing tile: 9 styles, 20 standard colors & unlimited color combinations; trim flashing, snowguards, copper gutters, cupolas & weathervanes; restoration & new construction.

**Key in No. 2840**

*Vande Hey Raleigh installed the French-clay Spanish roof tile on this building.*

If you'd like to order a gift subscription for a colleague, just call 800-548-0193

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Vande Hey Raleigh have become master craftsmen in the art of roof making by creating the most beautiful custom-crafted roof tiles between the earth and sky. Today, we continue to craft roofs of distinction using a rich palette of styles and colors, a blend of tradition, innovation and imagination as limitless as the stars.

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VANDE HEY RALEIGH

MASTERS IN THE *Artistry* OF ROOF TILE

KEY IN NO. 2840

KEY IN NO. 160

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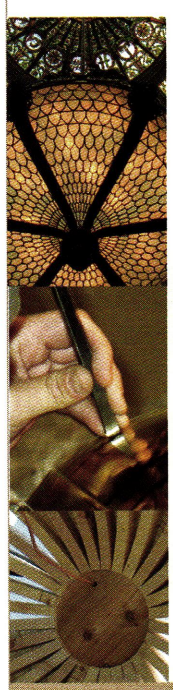
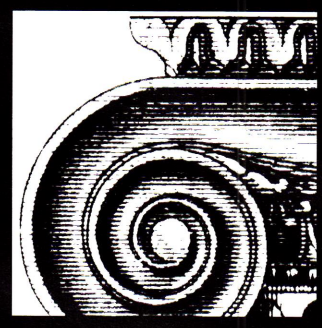
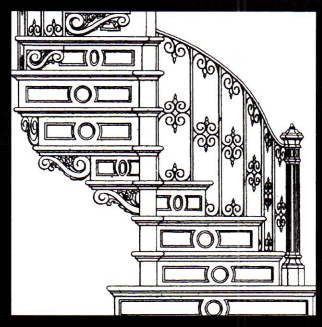


Traditional Product Reports is a micro site containing in-depth information on traditional building products and materials, including checklists, directories, buying guides, case studies, stories, articles, primers, installation tips, and other information, along with thousands of links to companies serving the field.

IN-DEPTH information

www.traditionalproductreports.com





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KEY IN NO. 160

# Slate Roofing

To order product information from a company in this sourcelist, go to **www.traditional-building.com/rs** and key in the appropriate reader service number.

**Arthur Vincent Company**
845-353-0348; Fax: 845-353-4284
16 S. Franklin Street
Nyack, NY 10960

General contractor: more than 40 years experience, renovating, restoring & waterproofing religious properties in the northeast US; roofing, bricks & mortars, cupolas & more.

**Key in No. 1987**

*Baschnagel Bros. was responsible for the new slate roof, stone restoration, metal roofing and new copper roof and cross for this 1870 landmark building in New York City.*

**Baschnagel Brothers**
718-767-1919; Fax: 718-767-5141
www.baschnagel.com
Whitestone, NY 11357

Manufacturer & installer of metal roofing: fabrication & installation of all types of ornamental copper gutters, leaders & more; metal repairs & restorations; slate roofing; cupolas; works with New York Landmarks Conservancy.

**Key in No. 1012**

*GAF offers a wide variety of roofing products, including these heavyweight Camelot slate-look shingles measuring 17x34½ in.*

**GAF Materials Corp.**
973-628-3000; Fax: 973-628-3865
www.gaf.com
Wayne, NJ 07470

Manufacturer of Timberline fiberglass-asphalt shingles with the look of wood: Slateline imitation-slate shingles; Country Mansion shingles with natural-stone or slate look; Grand Slate & Camelot shingles with the look of slate & more.

**Key in No. 1534 for Grand Slate; 1535 for Country Mansion; 1636 for Camelot; 1959 for TruSlate; 9270 for Country Estates**

**NIKO Contracting Co., Inc.**
412-687-1517; Fax: 412-687-7969
www.nikocontracting.com
Pittsburgh, PA 15213

Custom fabricator & contractor of sheet-metal & roofing: slate, tile & other roofing; storefronts, cornices, cupolas, domes, steeples, snowguards & leader heads; copper, lead-coated copper, zinc & stainless steel; metal ceilings.

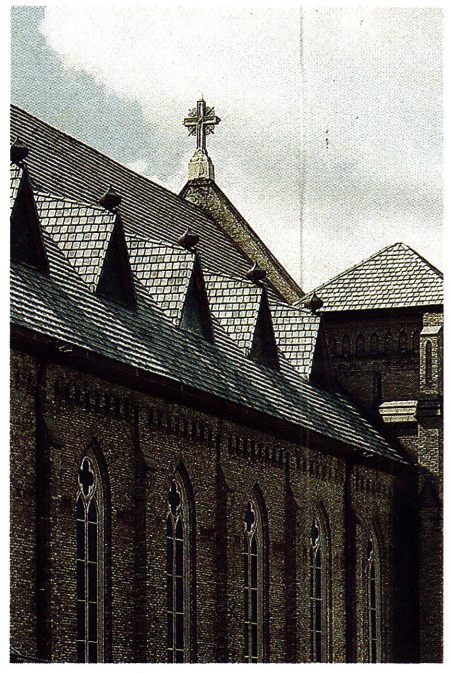
**Key in No. 8300**

*NIKO Contracting Co. replaced the slate roof and sheathed the clock-tower dome in copper on the Hancock County Courthouse in Findlay, OH.*

**Vande Hey Raleigh Mfg.**
800-236-8453; Fax: 920-766-0776
www.vrmtile.com
Little Chute, WI 54140

Manufacturer of architectural concrete & slate roofing tile: 9 styles, 20 standard colors & unlimited color combinations; trim flashing, snowguards, copper gutters, cupolas & weathervanes; restoration & new construction.

**Key in No. 2840**



*Vande Hey Raleigh supplied the Early American slate installed on this church roof.*

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KEY IN NO. 1959 FOR TRUSLATE, NO. 1636 FOR CAMELOT, NO. 9270 FOR COUNTRY ESTATES, NO. 1535 FOR COUNTRY MANSION, NO. 1534 FOR GRAND SLATE & NO. 2222 FOR SLATELINE

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- **The right choice for traditional buildings** (because it's real slate!)

***To learn more, visit www.gaf.com***

## 5 Core Colors.

## 4 Accent Colors.

*Note: Due to the inherent variability in natural slate (as well as the limitations of the commercial printing process), the actual color and texture of your TruSlate™ roof will vary from that shown here.*

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# Steeples, Domes & Cupolas

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### Arthur Vincent Company
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16 S. Franklin Street
Nyack, NY 10960

General contractor: more than 40 years experience, renovating, restoring & waterproofing religious properties in the northeast US; roofing, bricks & mortars, cupolas & more.

**Key in No. 1987**

### Baschnagel Brothers
718-767-1919; Fax: 718-767-5141
www.baschnagel.com
Whitestone, NY 11357

Manufacturer & installer of metal roofing: fabrication & installation of all types of ornamental copper gutters, leaders & more; metal repairs & restorations; slate roofing; cupolas; works with New York Landmarks Conservancy.

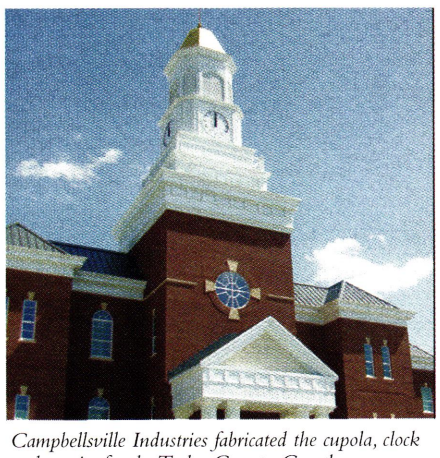
**Key in No. 1012**

*Baschnagel Bros. created this copper cross as part of its work on the 1870 St. Andrew's Episcopal Chuch in New York City.*

### Campbellsville Industries, Inc.
800-467-8135; Fax: 270-465-6839
www.cvilleindustries.com
Campbellsville, KY 42718

Manufacturer & installer of architectural metalwork: steeples, columns, cupolas, street clocks, railings, balustrades, finials, domes, weathervanes & louvers; aluminum, copper, zinc & lead-coated copper.

**Key in No. 2730**



*Campbellsville Industries fabricated the cupola, clock and cornice for the Taylor County Courthouse.*

### Cardine Studios
540-439-6460; Fax: 540-439-6462
www.cardinestudios.com
Bealeton, VA 22712

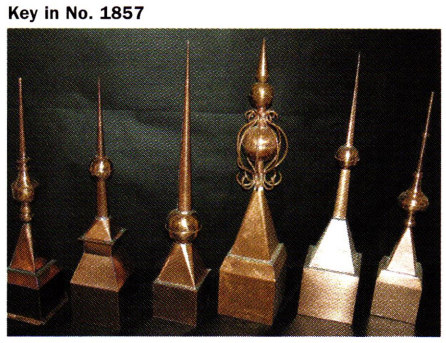
Designer & fabricator of hand-forged metalwork: furnishings, pot racks, lighting, fireplaces, gates, door hardware, straight & curved railings, panels & balusters; columns & capitals; conservatories; iron, bronze, copper, aluminum & stainless; national market.

**Key in No. 1867**

### Custom Copper Designs
405-417-6464; Fax: 405-793-9464
www.customcopperdesigns.com
Newalla, OK 74857

Manufacturer of custom copper architectural elements: cupolas, finials, cresting, gutters, louvers & weathervanes.

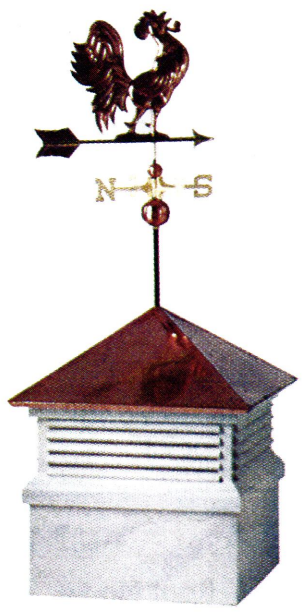
**Key in No. 1857**



*Handcrafted copper items such as cupolas, weathervanes, dormers, chimeny caps, finials are available from Custom Copper Designs.*

### Custom Home Accessories, Inc.
800-265-0041; Fax: 916-635-0228
www.customhomex.com
Rancho Cordova, CA 95742

Manufacturer of metalwork accessories: weathervanes, cupolas, finials, roof caps, mailboxes, lighted address plaques, signs & lampposts; cast aluminum, bronze, brass & copper; custom sizes.




*This Jefferson louvered cupola from Custom Home Accessories features a copper top and rooster weathervane.*

### EJMcopper, Inc.
407-447-0074; Fax: 407-447-0075
www.ejmcopper.com
Orlando, FL 32804

Custom fabricator of copper products: cupolas, dormers, weathervanes, finials, vents, kitchen hoods, awnings, chimney caps & more.

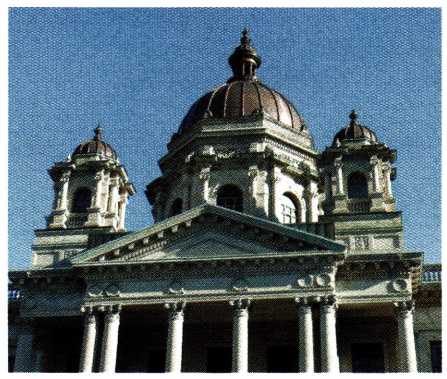
**Key in No. 1377**

*Cupolas from EJMcopper include the Bombay model.*

### Heather & Little Limited
800-450-0659; Fax: 905-475-9764
www.heatherandlittle.com
Markham, ON, Canada L3R 0H1

Fabricator & supplier of historical sheet-metal roofing & specialty architectural sheet metal: finials, cornices, leader heads, cresting, metal shingles, pressed-metal siding, cupolas, steeples, domes, reproductions; capitals; Kalemein & lot-line metal windows & doors.

**Key in No. 2470**



*These domes for the Onondaga County Courthouse, NY, were fabricated by Heather & Little.*

### Historical Arts & Casting, Inc.
800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84088

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snowguards, planters & more; iron, bronze, aluminum & steel; restoration services.

**Key in No. 1210**

### Michigan Ornamental Metals
201-945-4930; Fax: 201-945-4931
www.michiganornamental.com
Ridgefield, NJ 07657

Custom fabricator of metal ornament: columns, capitals, rosettes, wreaths, cornices & ceilings; cupolas, domes, gutters, finials, leaders & leader boxes; stamped & pressed sheet metal; replications & historic reproductions.

**Key in No. 9520**

### Munns Mfg., Inc.
435-257-5673; Fax: 435-257-3842
www.munnsmfg.com
Garland, UT 84312

Manufacturer of aluminum steeples, pinnacles, spires, cupolas, weathervanes & towers: variety of styles & designs; custom copper & aluminum dormers.

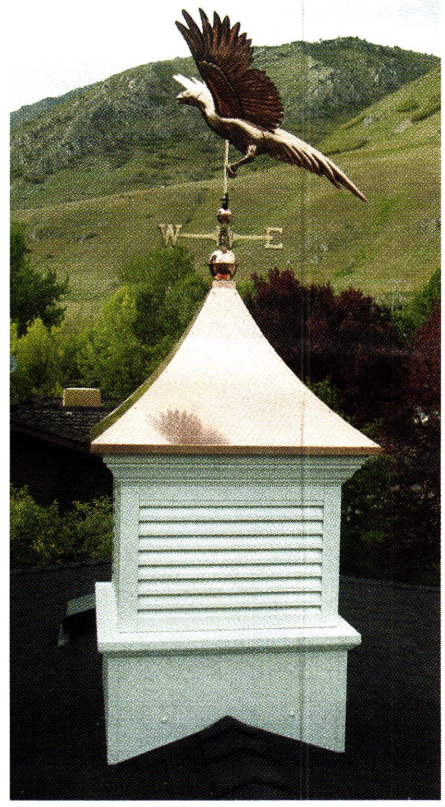
**Key in No. 1356**

*Munns Mfg. restored the steeple on the Assembly Hall in Salt Lake City, UT.*

### New Concept Louvers Inc.
801-489-0614; Fax: 801-489-0606
www.newconceptlouvers.blogspot.com
Springville, UT 84663

Manufacturer of cupolas & louvers: maintenance-free coated-aluminum in custom & stock sizes; 450 colors; copper finials, weathervanes, spires, turret caps, copper accessories, dormer vents, mailboxes, shutters, flashing & more.

**Key in No. 1264**

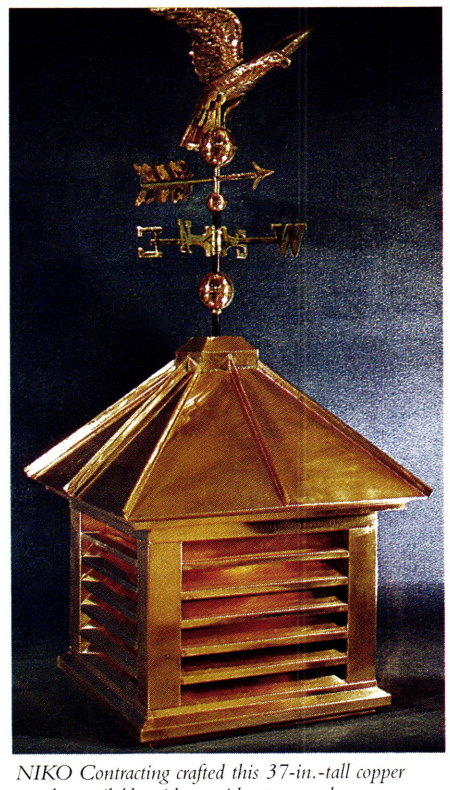



*New Concept Louvers created this traditionally styled cupola with a weathervane.*

### NIKO Contracting Co., Inc.
412-687-1517; Fax: 412-687-7969
www.nikocontracting.com
Pittsburgh, PA 15213

Custom fabricator & contractor of sheet-metal & roofing: slate, tile & other roofing; storefronts, cornices, cupolas, domes, steeples, snowguards & leader heads; copper, lead-coated copper, zinc & stainless steel; metal ceilings.

**Key in No. 8300**



*NIKO Contracting crafted this 37-in.-tall copper cupola, available with or without a weathervane.*

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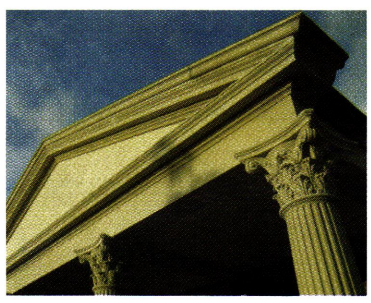

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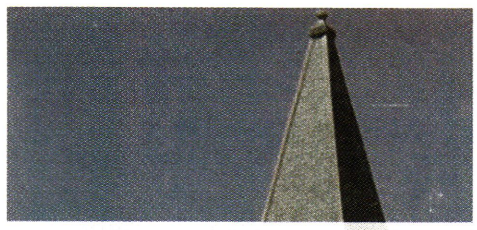

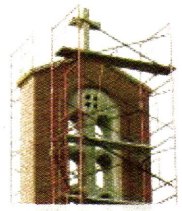

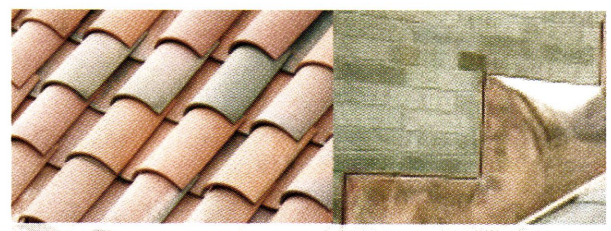

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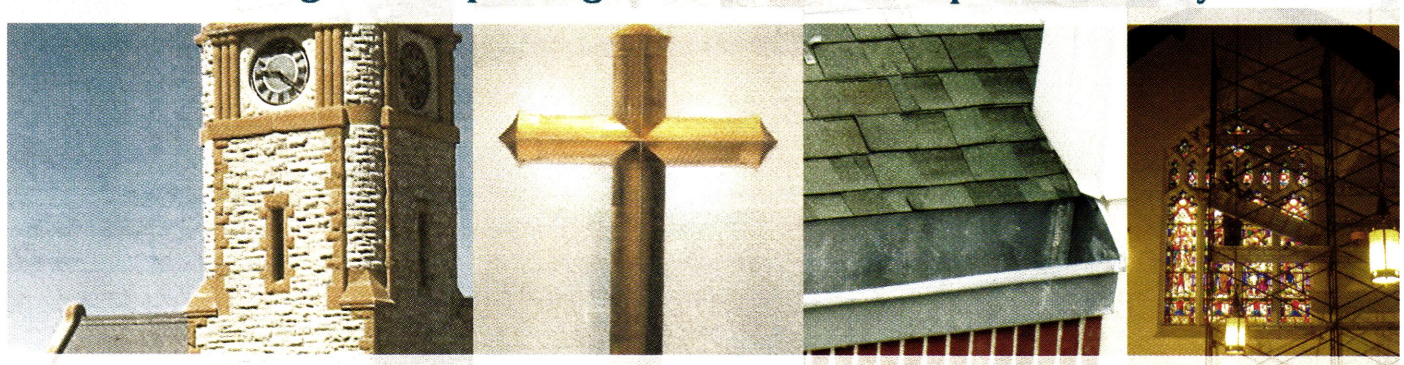

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Hoboken, New Jersey

www.cvilleindustries.com PH: 800/465-8135

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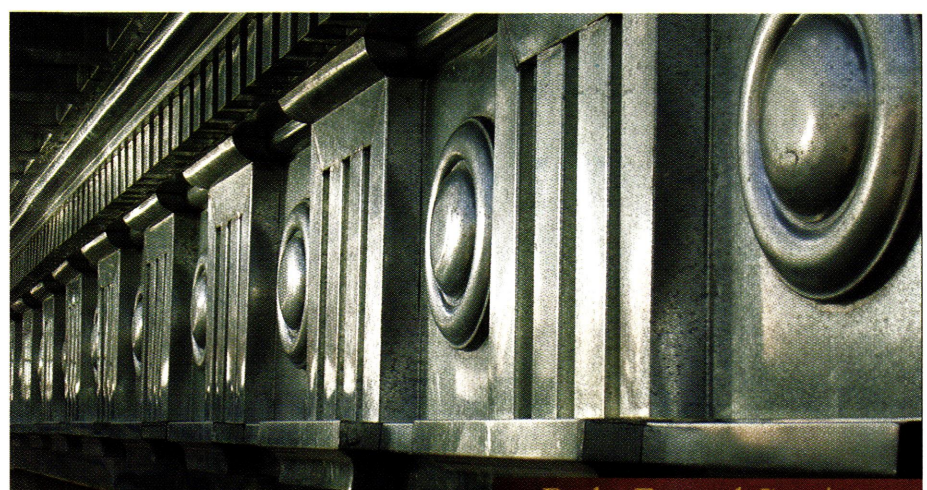

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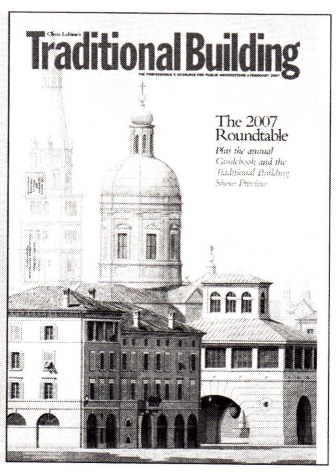


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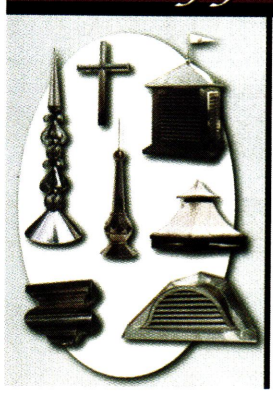

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KEY IN NO. 1377

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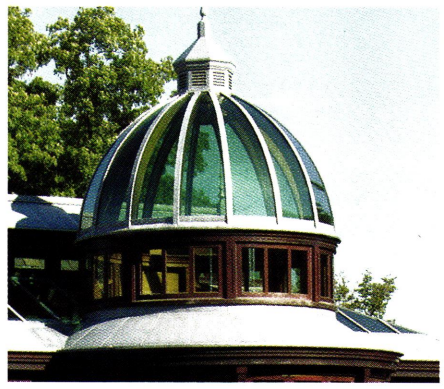
Denton, MD 21629

Manufacturer of handcrafted conservatories, greenhouses, gazebos, storefronts, roof lanterns, cupolas & pool enclosures: Honduras mahogany; custom designs; fully engineered with stamped shop drawings.

**Key in No. 8270**

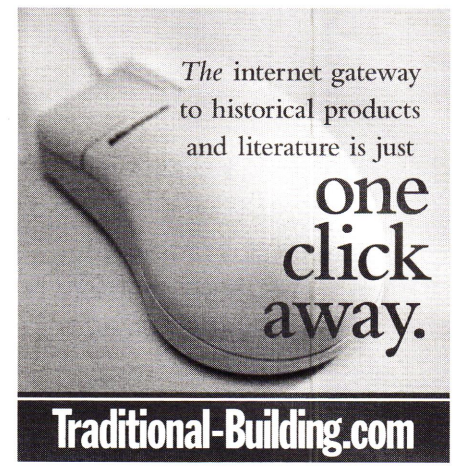


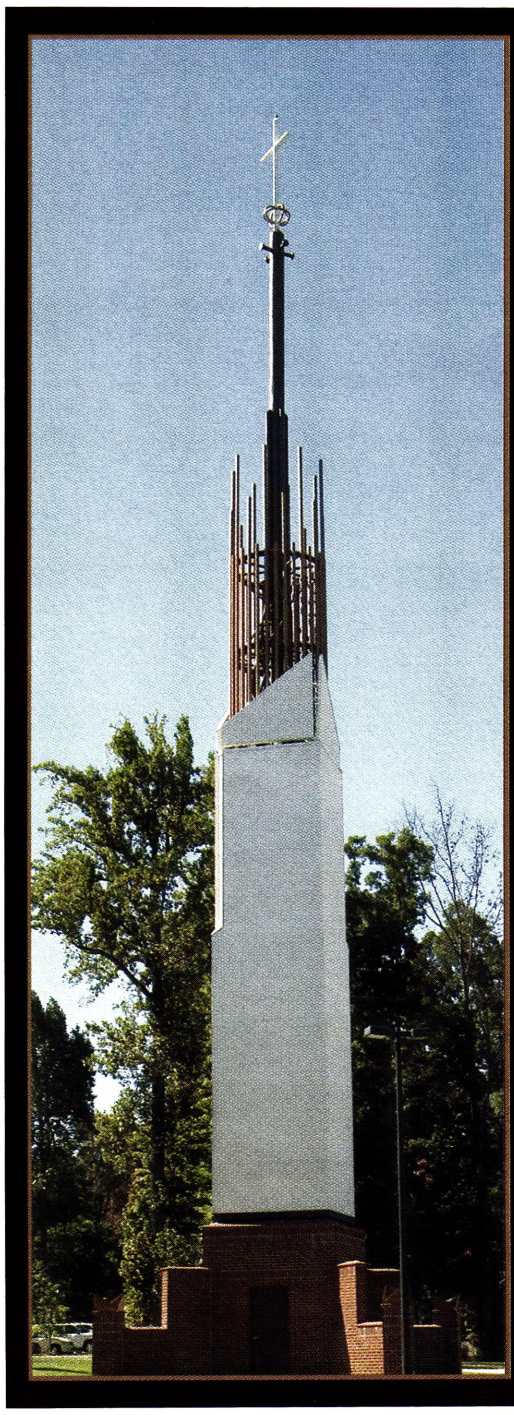
*This glass and lead-coated-copper dome was designed and constructed by Tanglewood Conservatories for a naturally stained mahogany conservatory.*

**Wiemann Metalcraft**
918-592-1700; Fax: 918-592-2385
www.wmcraft.com
Tulsa, OK 74107

Designer, fabricator, finisher & installer of custom ornamental metalwork: railings, fences, gates, columns, balustrades, lighting, grilles, furniture, planters, doors & more; all cast & wrought metal alloys, finishes & architectural styles; since 1940.

**Key in No. 1223**



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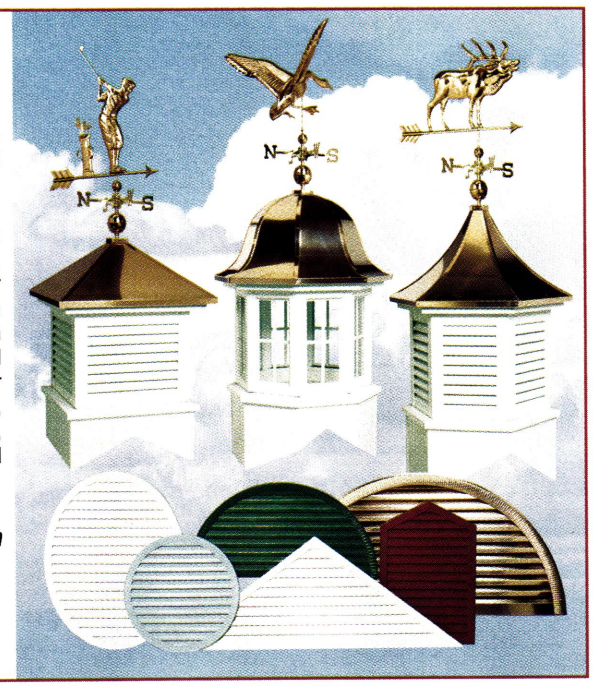

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Fax: (717) 697-2452
www.SNOJAX.com

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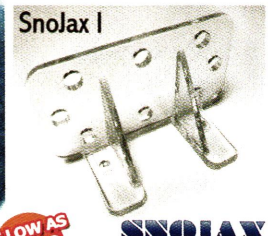
**SnoJax II**

AS LOW AS $3.50

5.22" W x 3.25" H
The **first** polycarbonate, adhesive mounted snow guard, invented in 1985. Features an interchangeable mounting base.
Adhesive tested: 700 lbs.
Screw tested: 3750 lbs.

**SnoJax I**

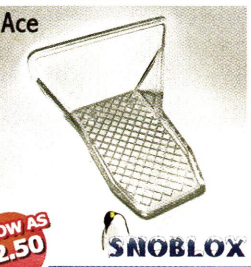


AS LOW AS $2.50

5.22" W x 3.25" H
The **first** patented polycarbonate snow guard introduced in 1976 for mechanically fastened applications only.
Screw tested: 1800 lbs.

In Stock Deuce Colors
Dark Bronze, Red, Ligth Gray, Blue, Clear, White, Dark Gray, Hunter Green, Black.

**Ace**



AS LOW AS $2.50

Face: 5" W x 3" H
Base: 3" W x 5" L
Waffled base increases bonding power. "V" shape fits most panels and does not trap water.
Adhesive tested: 1449 lbs.
Screw tested: 4849 lbs.

**Deuce**

AS LOW AS $1.75

Face: 3" W x 2.5" H
Base: 1.5" W x 4" L
Fits most common 36" panels with 9" flats. Sits in flat area between minor ribs. No rib straddling.
Adhesive tested: 1379 lbs.
Screw tested: 3456 lbs.

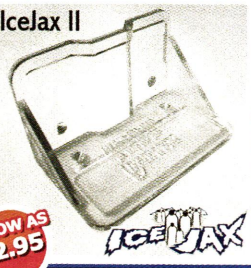
**Everflex SB-1800**

Snow Guard Sealant Only

SUREBOND

This ultra fast curing, cold weather sealant is suitable for installing snow guards when using screw down attachment. Spot-weldable, paintable, non-flammable and instantly water and weather resistant

**IceJax II**



AS LOW AS $2.95

5" W x 3" H
Based on the proven SnoJax II design. Features an interchangeable mounting base. Embossed logo enhances bonding power.
Adhesive tested: 1561 lbs.
Screw tested: 6388 lbs.

**IceJax I**

AS LOW AS $1.50

3" W x 2.5" H
Based on the proven SnoJax II design. Interchangeable mounting base. Fits most panel brands. Never undersold!
Adhesive tested: 500 lbs.
Screw tested: 4200 lbs.

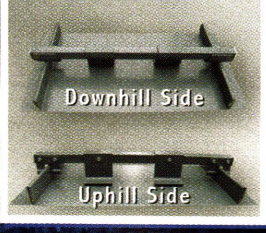
**SureBond SB-190**

Bonds:
5-8 SnoJax II
7-10 Ace
16-20 Deuce
5-8 IceJax II
16-20 IceJax I

SUREBOND

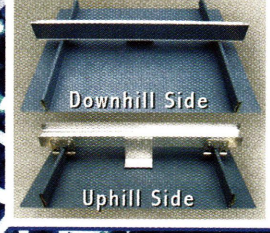
10.3 fl oz. caulking tube. Bonds SnoJax II, SnoBlox and IceJax to glossy coated Kynar™ painted metals with unmatched strength. Time and temperature constraints apply. Tensile strength: 2000 lbs.

**SnoBar / WindBar**



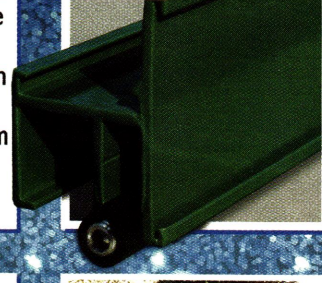

Color-matched stainless or galvanized steel. No seam penetrations! Lab and field tested. Attach year round! IceStoppers help prevent snow and ice from sliding under the bar.
SnoBar By Action Manufacturing, LLC.
Marketed By IceBlox, Inc.

**ColorBar**



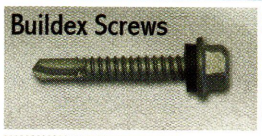

Features a Kynar™ painted "No Paint - No Wait" slide in, 2 inch metal strip. No seam penetrations! Attach year round! IceStoppers prevent snow and ice from sliding under the bar.
ColorBar By Action Manufacturing, LLC.
Marketed By IceBlox, Inc.

**ColorRail**



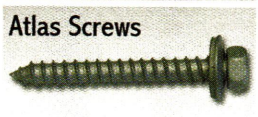
New for 2009! The industry's strongest aluminum rail sytem. Super durable, color matched TGIC Polyester finish on all components. Economical and reliable.
Marketed by IceBlox, Inc.
As manufactured by Action Manufacturing LLC

**Buildex Screws**



Self Drilling #14 Buildex Maxiseal Carbon Steel Screws. 1/4-14 X 1-1/2 Maxiseal Teks/3, Climaseal.

**Atlas Screws**

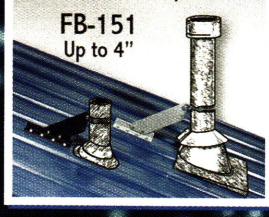


#14 Atlas Carbon Steel Wood Screws with Oxyseal II. 1/4-14 X 2. Fitted bonded washer.

**VentSaver**

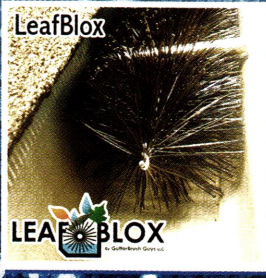
P-383 Up to 14"

FB-151 Up to 4"



This ingenious product protects vents, chimneys and masts from snow and ice avalanche! Made from non-corrosive, powder coated, aircraft grade aluminum and stainless steel cable or strap.

**LeafBlox**




This simple product helps eliminate gutter clogs caused by leaves and ice. Stiff LeafBlox bristles fill the gutter so leaves and large items pass right over. Avoid costly installs and gutter cleanings.

**SlateGuard Max**

NEW PRODUCT

The pre-assembled, sturdy stainless steel SlateGuard is an ideal retrofit solution for slate, asphalt shingle and composite tile roofs. Slots easily engage roof nails. Clear or colored snow guards available.

**Decorative SnowCatchers**

50 AVAILABLE COLORS

Maple Leaf, Sun Burst, Fleur-de-lis and Mustang Shapes.
Stainless Steel, 50 durable powder coat colors.

NEW PRODUCT

EcoBlox, the first recycled snow guard! Based on the SnoBlox Deuce. Made with 100% post consumer "green" polycarbonate, comprised mostly of recycled 5 gallon water bottles and compact discs.

*Prices shown reflect quantity discount. Visit www.SNOBLOX-SNOJAX.com to view snow guards price breaks.

Visit www.SPACINGTOOL.com for Instant Snow Guard Spacing Layouts

Made in USA

www.SNOBLOX.com www.SPACINGTOOL.com www.SNOJAX.com

# Snowguards

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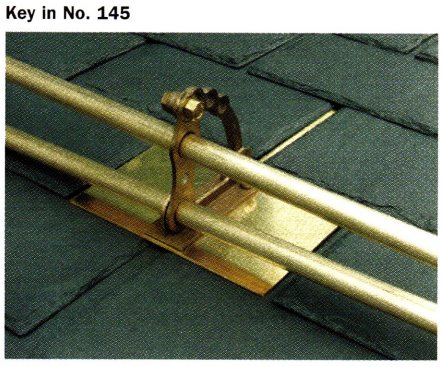
### Alpine SnowGuards
888-766-4273; Fax: 888-766-9994
www.alpinesnowguards.com
Morrisville, VT 05661

Manufacturer of snow-retention devices for every roof type: pad & pipe styles; copper, aluminum, brass & zinc; custom; easy to install; free advice & recommended layout patterns for delivering snow retention solutions.

**Key in No. 145**



*Alpine SnowGuards' model # 502 brass two-pipe snowguard is shown on a synthetic slate roof.*

### Historical Arts & Casting, Inc.
800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84088

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snowguards, planters & more; iron, bronze, aluminum & steel; restoration services.

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### NIKO Contracting Co., Inc.
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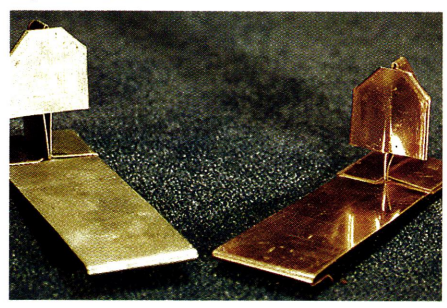
www.nikocontracting.com
Pittsburgh, PA 15213

Custom fabricator & contractor of sheet-metal & roofing: slate, tile & other roofing; storefronts, cornices, cupolas, domes, steeples, snowguards & leader heads; copper, lead-coated copper, zinc & stainless steel; metal ceilings.

**Key in No. 8300**



*Ornamental Copper and lead-coated copper snowguards are available from NIKO.*

*IceJax snowguards from SnoBlox-Snojax are shown here installed on a roof that also has the firm's LeafBlox gutter leaf protection.*

### SnoBlox-Snojax
717-697-1900; Fax: 717-697-2452
www.snoblox-snojax.com
Mechanicsburg, PA 17055

Supplier of 6 polycarbonate snowguard models: all feature large, forward-mounted faces to help prevent the movement of snow & ice on metal roofs; vent protection.

**Key in No. 1758**

### Vande Hey Raleigh Mfg.
800-236-8453; Fax: 920-766-0776
www.vrmtile.com
Little Chute, WI 54140

Manufacturer of architectural concrete & slate roofing tile: 9 styles, 20 standard colors & unlimited color combinations; trim flashing, snowguards, copper gutters, cupolas & weathervanes; restoration & new construction.

**Key in No. 2840**

*Vande Hey-Raleigh produces snowguards in a variety of styles.*

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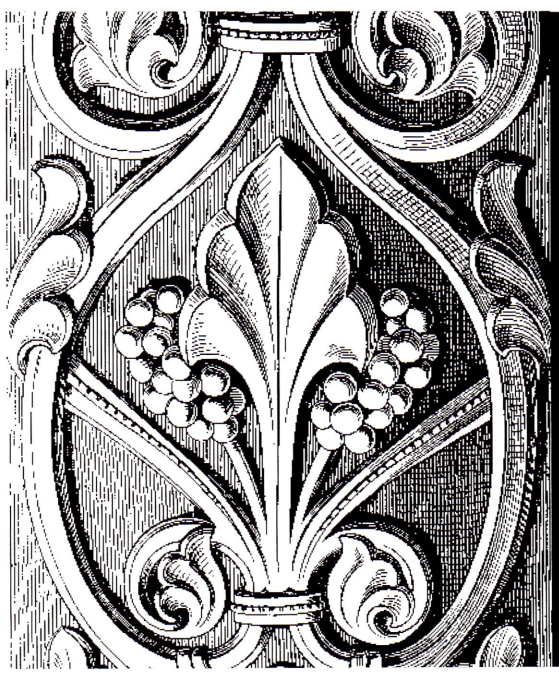
www.intbau.org



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# Tips from a Custom Carver

*A noted stone carver offers advice for designers and architects working with custom carvers.*

**By Chris Pellettieri**

To those of you who are commissioning a custom stone carver to create something for you, let me first say, "I commend you." Out of the small subset of people who have chosen to build in a traditional style, you are a member of an even smaller subset who has chosen to include components that are not off the shelf. By seeking the collaboration of an artisan, you are inviting another individual to contribute his/her creative energy to your project.

That decision has the potential to bring abundant character and uniqueness to your project, whether it's a fireplace mantel, doorway or any other item. However, there are some unwelcome outcomes that can be avoided. The following guidelines will help you avoid pitfalls when specifying a stone carving project.

### 1. Be selective when choosing an artisan.

From presidents to street sweepers, there are bunglers in every profession and stone carving is no exception. The surest ways to steer clear of them is to look at their previous work (preferably in person), to speak with the people they have worked for in the past, and to ask your respected colleagues' recommendations. It is almost always a mistake to choose an artisan based on lowest price alone. While it is possible that the lowest bid could come from someone who is young, hungry to prove himself and also gifted, it is more likely that it is someone inexperienced. It is best to check references and to see their past work.

### 2. Look for design inspiration.

Since you are commissioning a custom stone carver to create a unique piece, you have an exciting opportunity to design something very special. It makes no sense to squander the opportunity by having that person copy something out of a mass production catalog or some such source. Set your sights high. Be original. Include elements in the design that express something special about you, your profession, favorite animal, interests or whatever.

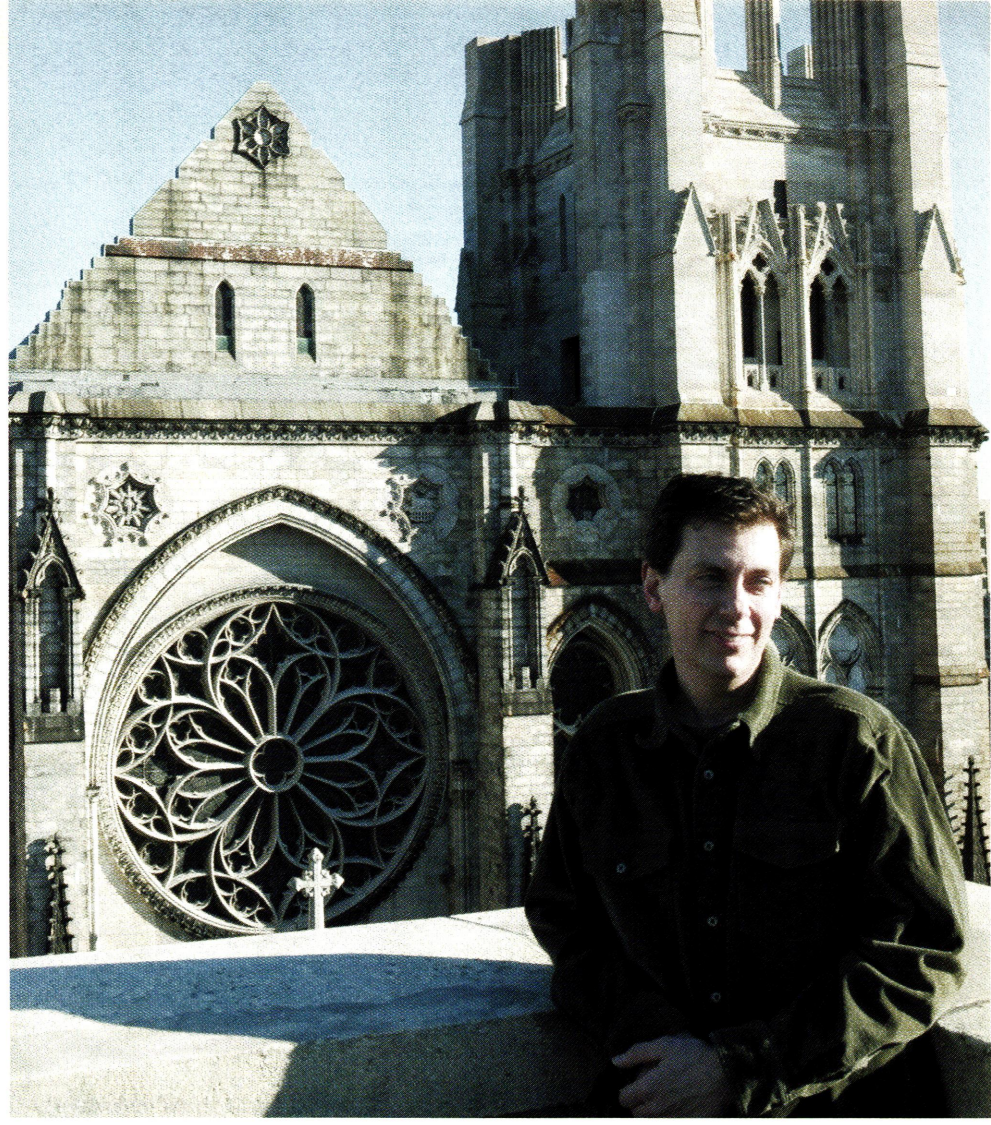
I have had clients who live within 15 minutes of the Metropolitan Museum of Art seek inspiration from drab brochures that they have gotten in the mail. I often tell them, "Go to the art museum and find something you like and I will do that for you." I know that I will never be equal to the geniuses whose work is on display in the Metropolitan Museum of Art, but if I am looking for inspiration or ideas, it makes sense to look at their work.

One source of inspiration came from one of my favorite clients, whose grandmother was an avid collector of ancient Middle Eastern art. He commissioned me to carve a fireplace mantel to be decorated with a motif from one of his grandmother's cylinder seals. A cylinder seal is a small bead-like object with designs carved into it so that when it is pressed into a soft clay tablet and rolled along it stamps a distinctive design on the clay. The finished mantel had special significance to my client's family.

### 3. Give careful consideration to timing.

Many stone carving projects can be very time consuming. It may seem odd to think that a decorative window could take more time to carve than the whole rest of the façade took to construct, but that is often the case. To some, the subordinate role that a fireplace mantel plays in the overall scheme of constructing/building a house would mean that one could wait until progress is pretty far along before getting started on the mantel. This is a big mistake. I have often had to try to install my work in rooms that are completely finished. It is very stressful to maneuver 1,000-pound pieces of stone under such circumstances. It is also very stressful to hold up an entire worksite that is waiting for your piece. So please be aware of how long stone carving projects can take and get started on them early.

A simple stone mantel can typically take a month to carve. Even before work starts though, there is often a wait of six to eight weeks for the material to be delivered from the quarry. Excluding the time needed for the design process, from the moment you give the carver the green light to the moment you receive the finished product could easily be two to three months for a simple mantel. A more complex project will take longer.



**Chris Pellettieri stands in front of the Cathedral of Saint John the Divine in New York City where he studied stone carving from 1989-1991. He describes it as a rare and wonderful opportunity to work stone in an architectural as well as a sculptural setting.** All photos: Luigi Pellettieri

### 4. Don't design in stone as though it were wood.

As we all know, stone is widely available in slab form so it resembles a sheet of plywood. Perhaps that similarity has given some designers the idea that it can be used that way.

Although stone can bear almost any load when compressed, its edges are highly vulnerable to crushing. That's not so much of a problem when a slab of marble or granite is used for a countertop, but when a design calls for two slabs to meet at a 90-degree corner and their edges are each sawn at 45 degrees so that the joint is less visible, they are ignoring the basic nature of the material. Equally ill-conceived is the practice of shaping a molding on a separate strip of stone and applying it to another larger piece, often with mitered corners. These are abuses of stone that should be avoided.

Another word of caution – all designs are not achievable in all types of stone. A visit to a marble or granite showroom might leave one with the impression that he could choose from hundreds of colors and patterns and have that material shaped as he wished. The truth is that even the most adventurous stone carvers probably have experience with only a handful of different materials. Stones can be very different. Some can take much longer to shape than others. Consult your carver before you sselect a particular material.

A final word of caution - don't expect the carver to deliver and install the work. While some carvers may gladly accept this responsibility, installing (or setting) stones is a separate trade with its own set of techniques. If you put a high priority on "one-stop shopping" you might unintentionally compel a competent carver who is an incompetent setter to botch the job and in so doing, damage his own creation.

By following these few basic guidelines, I am confident that your experience working with a custom stone carver will be satisfying and the resulting project will be a source of pride and pleasure. **TB**

**Above: This is one of a pair of "Foo Dogs" that Pellettieri designed and carved for a private garden. It illustrates the ability of an artisan to add vitality to a traditional decorative sculpture motif by adding his own unique creative approach.**

**Left: This window is one of a pair that took about six months to design and carve. Fortunately the clients got the project off to an early start.**

*Chris Pellettieri received a 2009 Arthur Ross award from the Institute of Classical Architecture & Classical America (ICA&CA) for artisanship. His work can be seen at www.stonecarving.us.*

**Web Extra: Additional photos can be seen at www.traditional-building.com/extras/Dec09carve.htm.**

# Stone Carving

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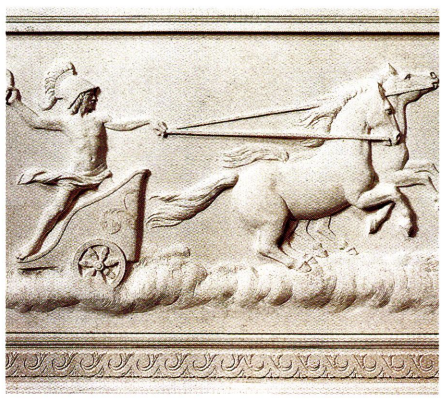
**Bybee Stone Inc.**
812-876-2215; Fax: 812-876-6329
www.bybeestone.com
Ellettsville, IN 47429

Manufacturer of custom-cut & -carved stone: sculpture & intricate carvings; columns & capitals; stone & carvings for exterior building restoration.

**Key in No. 8096**

**DMS Studios**
718-937-5648; Fax: 718-937-2609
www.dms-studios.com
Long Island City, NY 11101

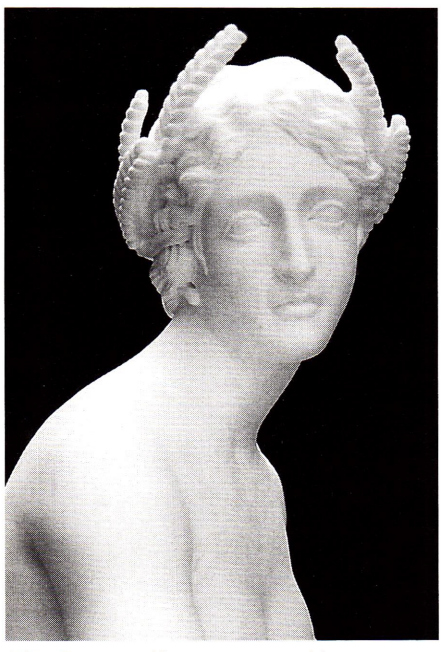
Custom fabricator of hand-carved stone elements: fountains, mantels, statuary, balustrades, capitals & landscape ornament; historically accurate.



*DMS Studios produces custom hand-carved sculpture, mantels, statuary and architectural elements for various applications; this detail is from a limestone mantel.*

**Fairplay Stonecarvers**
440-775-7878; Fax: 440-775-7979
www.fairplaystonecarvers.com
Oberlin, OH 44074

Carver of custom stone & marble: sculpture, mantels, columns & capitals, fountains, planters & landscape ornament; traditional styles; reproduction, repair & restoration services.



*This Carrara marble statue was carved by master stone carver Nick Fairplay of Fairplay Stonecarvers.*

*This 22x15-in. terra-cotta bas relief is one of 14 Stations of the Cross created by Gerald Siciliano for St. Jane Frances de Chantal Roman Catholic Church in Bethesda, MD.*

**Gerald Siciliano Studio Design Associates**
718-636-4561; Fax: 702-442-7847
www.geraldsicilianostudio.com
Brooklyn, NY 11215

Custom fabricator of fine art: liturgical sculpture, architectural details, capitals, fountains, fireplaces & mantels; bronze, granite, marble & stone; interior & exterior; repair & restoration; studio & fieldwork; 30 years of experience.

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**Kopelov Cut Stone, Inc.**
505-867-0270; Fax: 505-867-6787
www.kopelovcutstone.com
Bernalillo, NM 87004

Fabricator of stone architectural elements for historic restoration & historically inspired new construction: commercial & residential facades in limestone, marble & sandstone; carved mantels & monuments; columns & capitals.

*This custom fireplace was hand-carved in Texas limestone and arkosic sandstone by the artisans at Kopelov Cut Stone.*

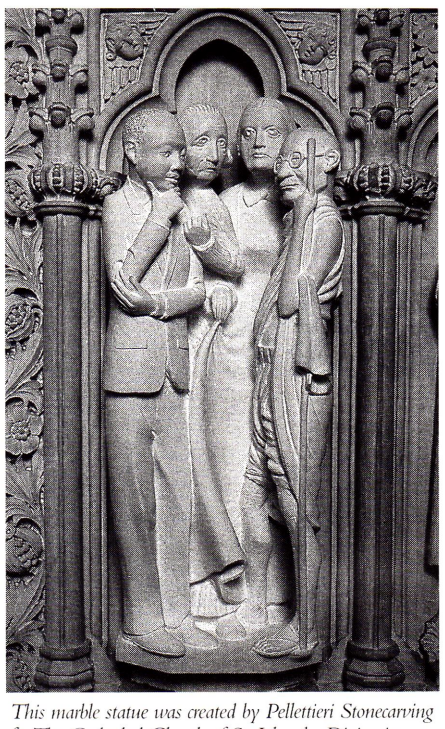
**Limestone Concept, Inc.**
310-278-9829; Fax: 310-278-9651
www.limestoneconcept.com
Gardena, CA 90249

Custom fabricator & distributor of limestone items: fireplaces, fountains, columns, capitals, balustrades, mantels, benches, ornament, sculpture, planters & urns; French limestone floors & reclaimed limestone.

*This carved acanthus leaf molding is typical of the carving work done by the artisans at Limestone Concept.*

**Pellettieri Stonecarving**
646-229-6418; No fax
www.stonecarving.us
New York, NY 10027

Custom fabricator of stone carving & sculpture: figures & architectural ornament in limestone, marble & sandstone; tiered & wall sculptural fountains; planters & urns; mantels; baptismal fonts, pulpits, tombs & inscriptions.



*This marble statue was created by Pellettieri Stonecarving for The Cathedral Church of St. John the Divine in New York City.*

**Traditional Cut Stone, Ltd.**
416-652-8434; Fax: 905-673-8434
www.traditionalcutstone.com
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European master carvers: architectural ornamentation, fountains, ecclesiastical specialties & monumental statuary; columns & capitals; restoration; historical reproduction in limestone, sandstone & marble; stone design with clay & plaster models.

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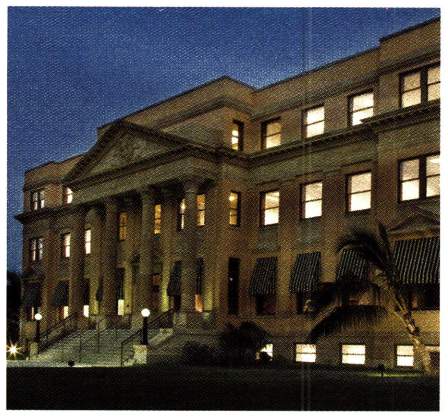

*Traditional Cut Stone supplied more than 2,500 pieces of replacement stone for a complete restoration of the historic Palm Beach County Courthouse, including the eagle carving and tympanum.*

**Trow & Holden**
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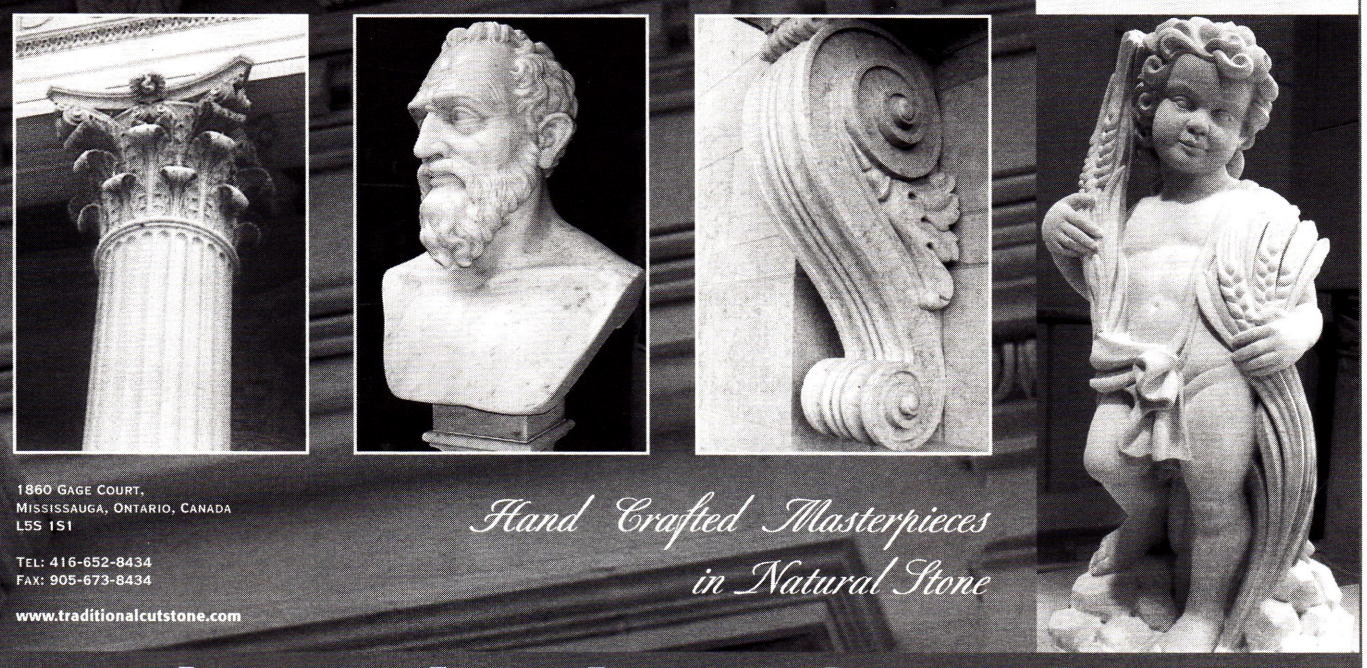

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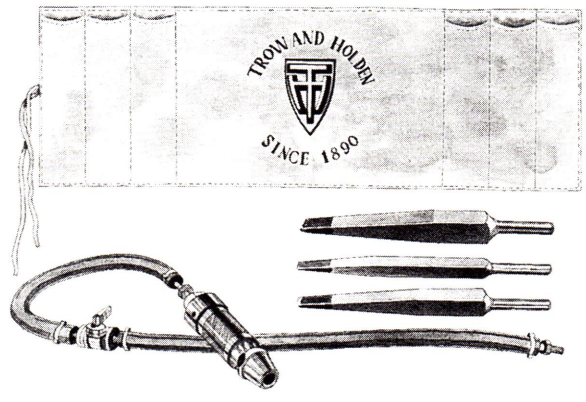


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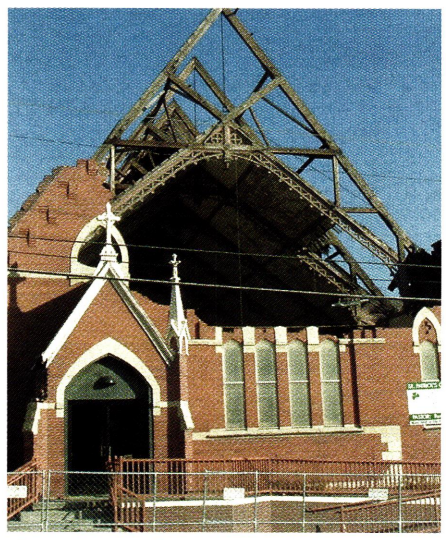

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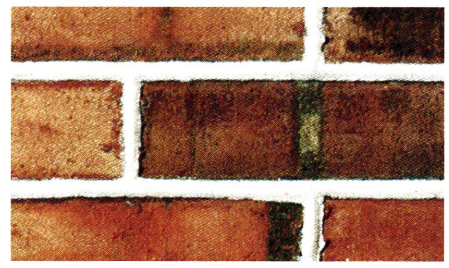

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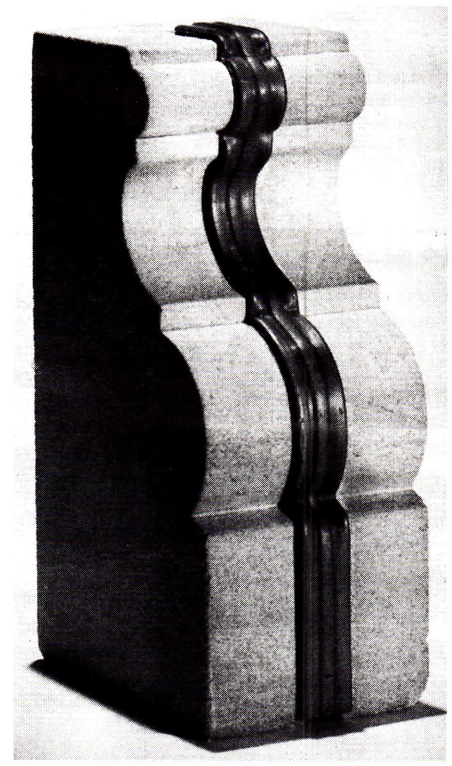

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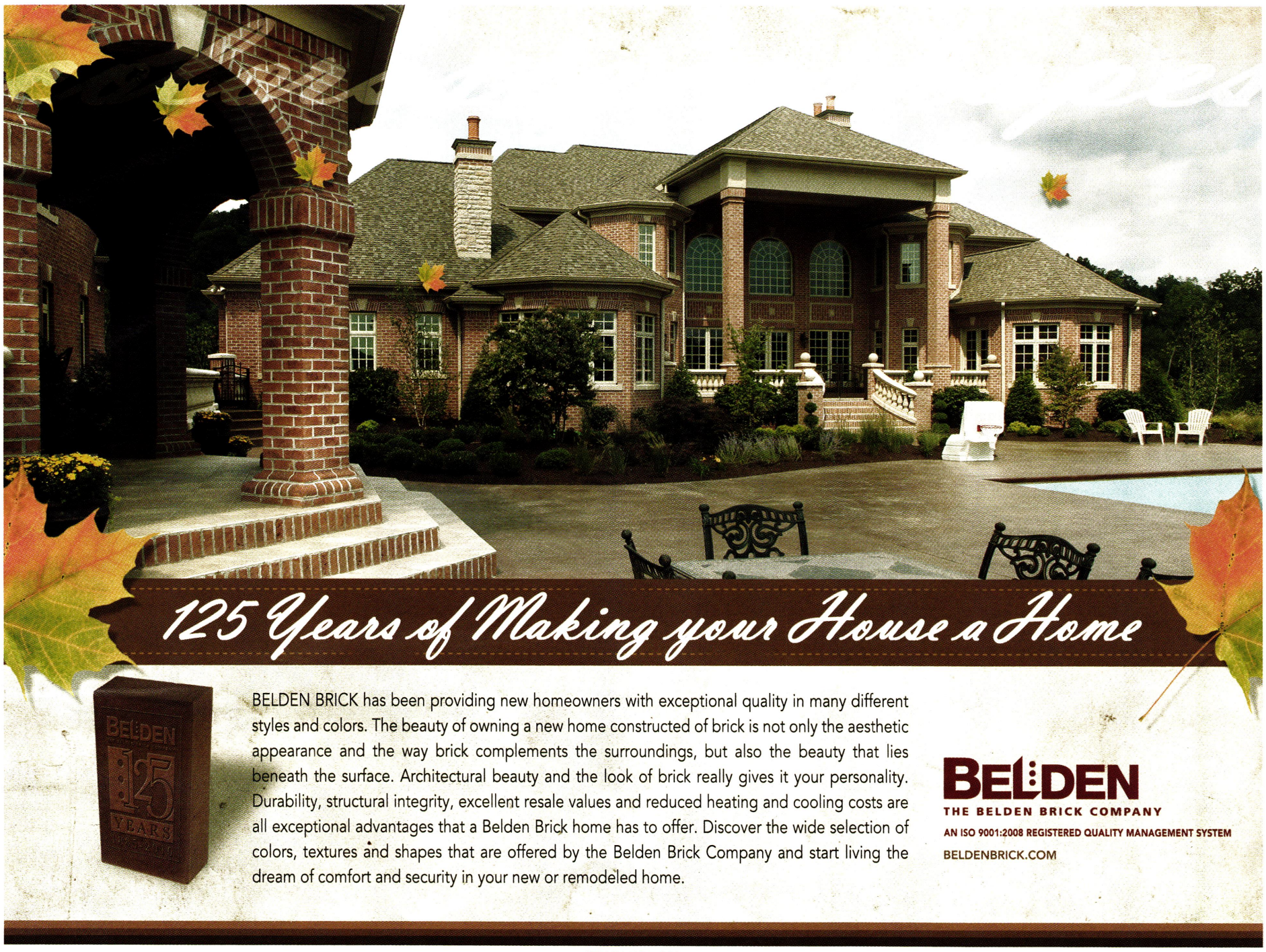

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# calendar of events

**"The Planning and Design of Public Libraries" Educational Course, January 12-14, 2010.** Harvard Graduate School of Design will conduct a three-day course in Cambridge, MA. Intended for architects and industry professionals, the course will focus on changing library services and technologies, and their effects on library design. For more information, visit execed.gsd.harvard.edu/professional/exec_ed/.

**International Builders' Show, January 19-22, 2010.** The annual International Builders' Show will be held at the Las Vegas Convention Center in Las Vegas, NV. The event features over 175 education sessions and the exhibit floor will showcase the latest products of the industry. Visit www.buildersshow.com for more information.

**ICA&CA EverGreene Architectural Arts Studio Tour, February 25, 2010.** ICA&CA is offering a guided tour through EverGreene Architectural Arts' design and mural studio in New York City. The tour will go behind the scenes to get a first-hand look at state-of-the-art technology. For more information, visit www.classicist.org.

**NOMMA's 2010 METALfab Education Expo & Exchange, March 3-6, 2010.** The National Ornamental & Miscellaneous Metals Association (NOMMA) will hold its largest annual convention in Tulsa, OK. The event will focus on educational lectures and sessions, hands-on training and tours of local ornamental iron workshops. For more information and to register, visit www.nomma.org.

**Concrete Décor Show & Decorative Concrete Spring Training, March 16-19, 2010.** The Concrete Décor Show & Decorative Concrete Spring Training event will be held in Phoenix, AZ. It will include seminars designed for architects, designers and builders focusing on creative alternatives using decorative concrete for flooring, hardscapes, walls and other usage. Presentations will include case studies of LEED-certified projects highlighting the benefits of concrete in green building. Many seminars and workshops offer AIA CEUs. For more information, visit www.concretedecorshow.com.

**SGAA Annual Summer Conference, June 28-30, 2010.** The Stained Glass Association of America's summer conference will be held at the Hyatt Regency Crown Center in Kansas City, MO. Lecture themes will include craft techniques in making art glass, artistic considerations and approaches. For registration and conference updates, visit www.stainedglass.org/html/SGAAconference.htm.

**Traditional Building Exhibition & Conference, October 20-23, 2010.** The nation's largest event dedicated to historic restoration, renovation, landscapes and streetscapes, as well as historically inspired new construction will be held at the Navy Pier in Chicago, IL. The conference includes sessions with professional learning units available through the AIA, ASLA, ASID, IIDA, AIC and the APA. For details on programs and exhibiting, go to www.traditionalbuildingshow.com.

**14th Annual International Preservation Trades Workshop, October 21-23, 2010.** IPTN will partner with Frankfort Parks, Recreation and Historic Sites and others to host its 14th annual workshop in the quaint historic town of Frankfort, KY. Attendees will be within walking distance of nearby River View Park and the historic architecture of downtown Frankfort. For workshop updates, visit www.iptw.org.

**National Building Museum Programs & Exhibits.** The National Building Museum in Washington, DC, offers a series of exhibits and programs throughout the year on topics dealing with architectural design and building. Many of the programs qualify for AIA continuing-education units. For details on current programs and a tour schedule, go to www.nbm.org.

**Preservation Education Programs.** Throughout the year, the Preservation Education Institute, a program of Vermont-based Historic Windsor, Inc., offers workshops on various preservation skills, technologies and practice for building and design professionals, property owners and others. For a complete listing of current programs, go to www.preservationworks.org or contact Judy Hayward at 802-674-6752.

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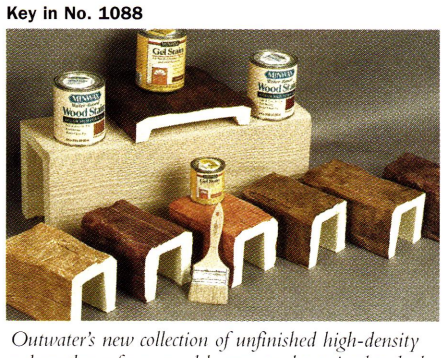

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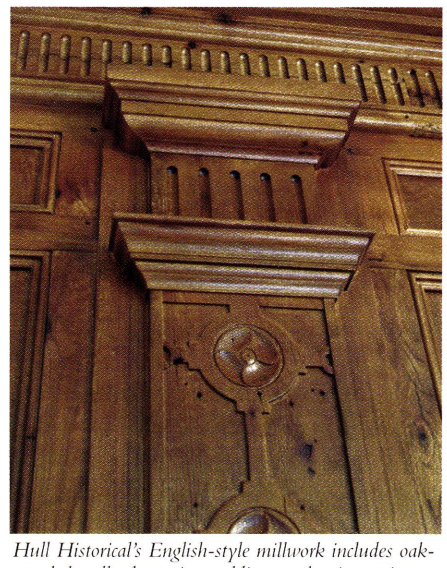

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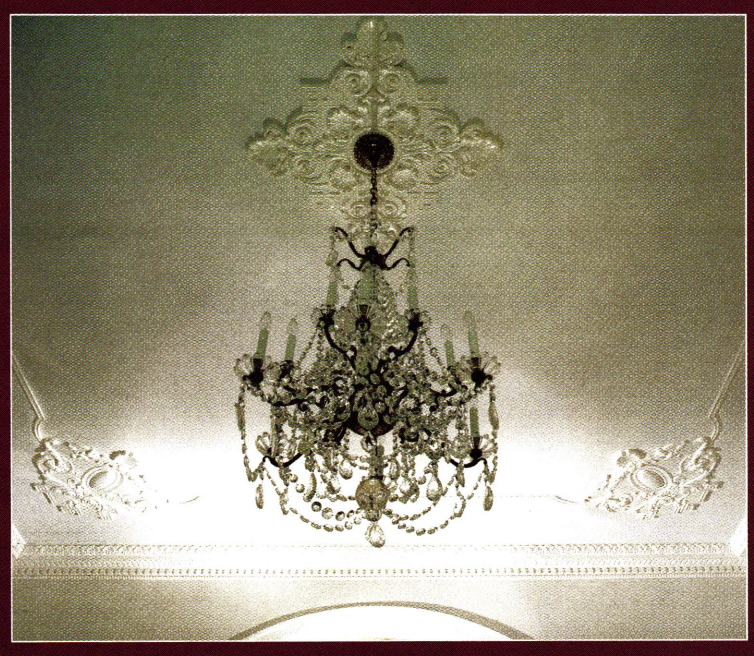

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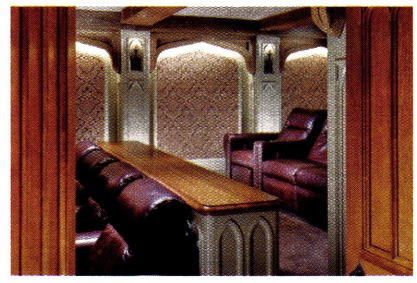

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# Metalwork for the Ages

**Zinc Sculpture in America, 1850 to 1950**
*by Carol A. Grissom*
University of Delaware Press, Newark, DE; 2009
706 pp; 354 color and 200 b&w illustrations; $65
ISBN 978-0-87413-031-7

*Reviewed by Eve M. Kahn*

Carol A. Grissom, a conservator at the Smithsonian, seems to have crawled all over America, applying magnets to metal statues indoors and out. If the magnet does not cling, one telltale sign of the presence of zinc, she can also check if the sculpture surface has resisted rust and scratches, and if any cracks have formed that reveal what she calls "the bright silver facets typical of zinc crystals."

This exhaustive, at times fascinating study, complete with more than 1,000 footnotes, explains how the metal has been shaped since the Bronze Age. And the depth and breadth of research into zinc's U.S. manifestations is astonishing. Grissom documents how Americans have displayed and maintained some 320 models of zinc statues – whether Civil War soldiers, firemen, Venuses, griffins or greyhounds – at sites ranging from cemeteries to offices, condo complexes, campuses and antiques galleries.

Yet she is careful to point out how much remains to research. No one is sure, for instance, where the word zinc comes from. Athenian plates made from hammered zinc have turned up in archaeological sites dating from the 2nd century BCE, and by the 10th century CE, Indian sculptors had developed a zinc-mercury amalgam. But the "first certain reference to metallic zinc," Grissom writes, shows up in a Swiss-German alchemist's text dated 1526. "The word is thought to be adapted from the old German word zinke, meaning pointed, which describes the appearance of zinc crystals," she explains. Zinc was not applied on a monumental scale until the 1830s, when German foundries started producing Prussian state architect Karl Friedrich Schinkel's designs for the likes of zinc column capitals, fountains and warriors on horseback.

Virtually every European capital soon began keeping up with the German trend, and high-relief zinc gods and saints spread from Budapest museum pediments to Helsinki church domes. The products were also exhibited at expositions worldwide, influencing American tastes. In the 1850s, a German immigrant, Moritz Seelig, set up a zinc foundry in the Williamsburg section of Brooklyn and imported European statues and ornament to copy for the booming U.S. market. "A taste for elaborate, eclectic, and exotic decoration was fulfilled by statuary, cornices, crestings, and finials made of zinc," Grissom notes. The Civil War gave American zinc another huge boost: through the 1910s, Grissom calculates, as many as a dozen towns a year dedicated commemorative zinc figures of Union or Confederate soldiers on pedestals in public parks.

Through the 1920s, zinc foundries touted the material's virtues "with hyperbolic zeal," Grissom writes. The metal is indeed lighter, cheaper and easier to keep clean than bronze, iron or stone, and zinc does not corrode or shrink much. It endures best when plated or painted; the foundries advertised simulations of

**Based on an 1880s woodcarving by Samuel Robb, this zinc Native American poses on a stone base near a West Virginia courthouse.** Photos: Carol Grissom, Smithsonian Institution

**Poseidon lofts his trident at a fountain in Indiana.**

"bronze, gold, marble, brownstone, granite, or polychrome wood," Grissom explains. But that proved the material's downfall, as 20th-century highbrow architects, critics and other tastemakers started advocating honesty in materials rather than what one metallurgist scorned as "shams and paints and varnishes."

By 1927, Seelig's Brooklyn foundry was out of business. The last owner, Grissom laments, "smashed remaining zinc statues to bits for scrap." Just a few contemporary uses for architectural zinc remain; it appears in Belgian and French roofing, and in the creepy blade-shaped façade of Raimund Abraham's 2002 Austrian Cultural Forum in midtown Manhattan.

Belle Epoque zinc, fortunately, has held up well. Damage – due to vandalism, pollution, falls, storms or sagging – is usually relatively easy to undo. Grissom devotes a 22-page chapter to repair and conservation advice, even detailing where to apply Araldite gray epoxy or Organic Soldering Flux Sticks. (Just don't ever pump concrete into dented or crumpled zinc statues – they will never drain properly again, and eventually blow apart at the seams.) Grissom also describes how thousands of individual statues have survived. With examples organized into chapters like "trade figures" or "famous men," she gives their current street addresses and details where they have traveled. A typical entry, for a polychromed Puck figure in Sandusky, OH: "Installed in a museum; previously atop the hot dog stand; before that in the window of the cigar store."

Not every tale of zinc in America is heartwarming, though. She mentions pieces that have eroded to the point that they have been brought indoors, and others pushed off roofs or lost in fires or hurricanes (destroyed examples have often been replicated by modern-day zinc suppliers like Alabama's Robinson Iron and Cincinnati's Eleftherios Karkadoulias). But overall this book provides indisputable proof that 19th-century engineering marvels do not burden town budgets. With little maintenance, zinc statuary keeps entertaining and enlightening passersby, and adds flavor to American streetscapes. TB

**Web Extra: Additional photos can be seen at www.traditional-building.com/extras/Dec09RevZinc.htm.**

# The Ethereal Geometry of Gothic Vaults

**Heavenly Vaults From Romanesque to Gothic in European Architecture**
*by David Stephenson*
Princeton Architectural Press, New York, NY; 2009
192 pp; hardcover; 125 color and 15 b&w images; $65
ISBN 978-1-56898-840-5

*Reviewed by Clem Labine*

*Heavenly Vaults* is a photographic tour de force conjured up by Dr. David Stephenson, associate professor at the School of Art, University of Tasmania, Hobart, Australia. In this new volume he focuses his camera – and our attention – on a single aspect of Europe's great Romanesque and Gothic Cathedrals: the vaulting systems used to cover the soaring ceremonial spaces erected by master builders of the medieval through Renaissance periods.

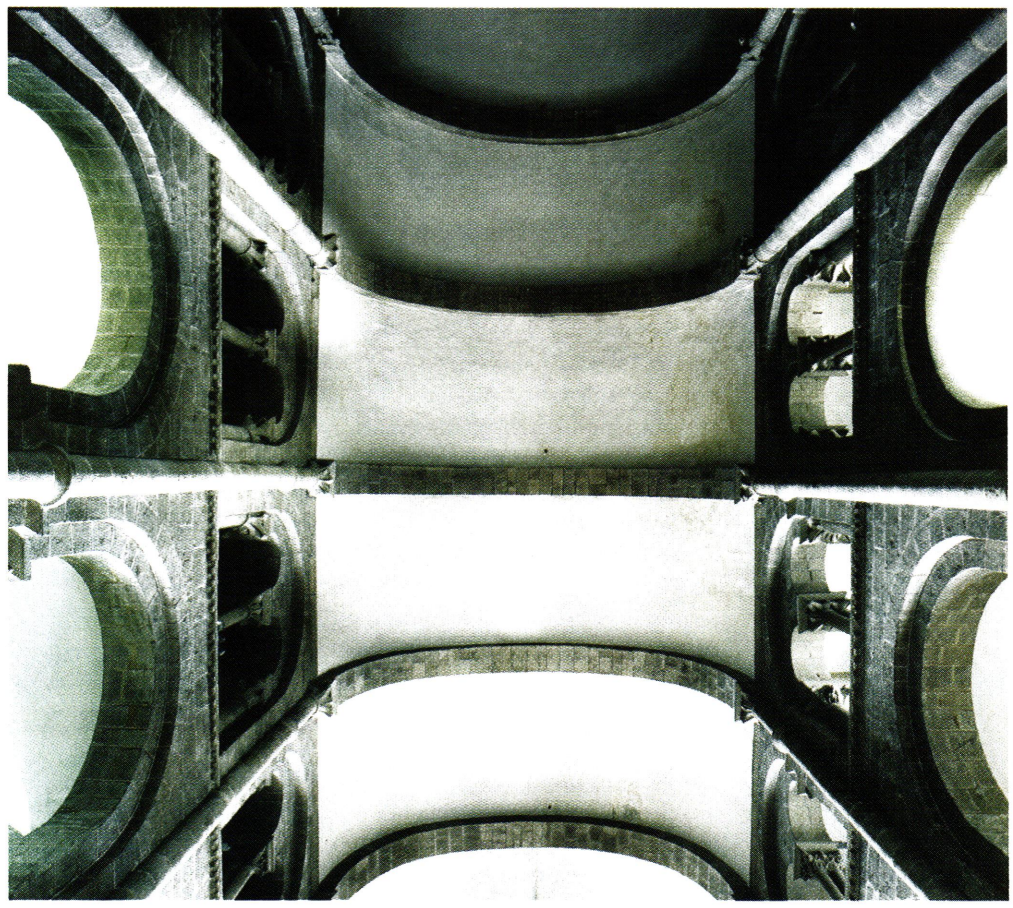
With the eye of both an artist and an architectural historian, Stephenson dramatizes the architecturally sublime by providing straight-on views of the awe-inspiring vaulted ceilings of more than 80 great churches, cathedrals and basilicas. The author has created beautifully lit and highly detailed photographs that reveal Gothic vaulting with all its complex geometry, decorative detailing and ornamental painting in ways never seen before. He starts his visual taxonomy with two of the ancient Roman precedents that medieval builders could study: Hadrian's coffered dome of the Pantheon, and the groin vaults of the Baths of Diocletian.

Roman builders, however, were able to use high-strength Pozzolana hydraulic mortars to create poured-concrete vaults as monolithic units (as in the Pantheon). But the secrets of Roman concrete had been lost to medieval masons, who had to use lower-strength, slow-setting lime mortars. So vaulting systems from the medieval period onward had to depend on stone ribs (arches) for basic structural support. Spaces between the ribs were filled with thin lighter-weight unit-masonry webbing, which made construction of these Gothic vaults an altogether tricky affair. But the master builders were artists as well as engineers, and over the years they devised countless ways to use the exposed ribs to create striking, abstract geometrical forms. The netlike quality of the ribbing also gave a visual lightness to the ceilings – making the viewer forget the hundreds of tons of masonry suspended directly overhead, and how many times vaults like these had collapsed while the Gothic builders were perfecting their art.

Numerous texts explore the building technology of the great European religious buildings, and Stephenson does not attempt to duplicate that material. Rather, he concentrates on the aesthetic effects produced by these architecturally complex vaulting systems, which his full-color photographs so brilliantly illuminate. The images give you the viewpoint you'd have if you were lying flat on the floor of say, Chartres, and looking straight up at the ceiling. The images are all large (9½ x 9½ in.), very sharp and rich with detail. The photos obviously required meticulous lighting set-ups to illuminate the usually poorly lit ceilings. As a result, readers of this book see the vaulted ceilings with greater clarity than any tourist would when standing in the same spaces.

Stephenson's text provides a basic explanation of the evolution of Gothic vaults, from simple arched stone tunnels (barrel vaults), to quadripartite and sexpartite rib vaults, to intricate tierceron and lierne vaults with their decorative ribs,

**Employing stone rib arches to support webbing of thin unit-masonry allowed vaulting systems to be made lighter – and thus the walls of the nave could be made higher and more dramatic. This photo shows the late Gothic vaults of the Church of Santa Maria, Belem, Portugal, 1501-17.**



**Builders of the early Romanesque cathedrals (shown here is the Cathedral of St. James, Santiago de Compostela, Spain, 1075-1211) created nave ceilings using basic barrel vault systems adapted from the ancient Romans.**

to complicated net, fan and ribless diamond vaults of the late Gothic period. Besides technical developments, no small part of the evolving complexity and beauty of the vault forms was the desire of the ancient builders – and their patrons – to engage in a "Can you top this?" competition with other cathedral builders. Although the competition was ostensibly motivated by a desire to glorify God in ever-more-magnificent ways, one has to suspect there was more than a bit of architectural ego involved also.

Besides the two Roman precedents already mentioned, the photographs start chronologically with the Basilica di San Miniato al Monte (1013-62) in Florence, and progress through Segovia Cathedral (1563-91), Segovia, Spain. The geographic scope includes churches from France, England, Germany, Spain, Italy, Portugal, Poland, Czech Republic and Belgium. Individual buildings documented include old favorites like Salisbury Cathedral, Chartres, Wells Cathedral, York Minster, Reims Cathedral, Amiens Cathedral, and Sainte-Chappelle – plus 73 other famous and less-famous religious buildings.

There are two limitations to this volume; one could have been easily remedied, the other perhaps not so easily. The biggest problem: Although there are five pages devoted to endnotes and a bibliography, the book has no index. So if you are trying to find an image of a particular cathedral, you must rifle through a lot of pages.

The other limitation is that the text describing each ceiling appears many pages away from the image. This back-and-forth format may have been unavoidable, given that each image takes up a full page. The editors mitigate this drawback by printing, on each of the text pages, postage-stamp images of the vaults being discussed, along with the corresponding page number where the full-size image can be found.

Not many architects today are called upon to design a Gothic cathedral. But there are many other reasons why a designer might wish to have this volume in his/her library. First, on a purely practical plane, the vast array of vault types delineated provide a primer on geometric forms and inspiration for patterns in both two and three dimensions. It also demonstrates how stonework can be made to appear light and airy through skillful design.

Beyond their practical value as design sources, however, the photographs inspire by showing the spiritual power that master builders were able to wring from simple stone and plaster. The seeming infinite variety, complexity and refinement of forms created within a single building type are a great testimonial to the inventiveness of the human mind. The medieval master builders embodied the ideal that practitioners of the new traditionalism keep alive today. The great cathedral designers never resorted to blind copying; rather they took the best ideas from previous generations and kept on improving and refining those precedents. And in so doing, they created works that we still marvel at today. **TB**

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*Clem Labine is the founder of* Old House Journal, Traditional Building *and* Period Homes *magazines. He has received numerous awards, including awards from The Preservation League of New York State, The Arthur Ross Award from the Institute of Classical Architecture & Classical America (ICA&CA) and The Harley J. McKee Award from the Association for Preservation Technology (APT). Labine was a founding board member of the ICA&CA. He served on the board until 2005 when he moved to Board Emeritus status. His blog can be found at www.traditional-building.com.*

# Spirit in Architecture

*By Alvin Holm, A.I.A.*

"Old buildings exude spirit; few new buildings do." This simple statement is not likely to raise any serious objections because it seems so entirely subjective. Who would quarrel with someone's apparently sentimental view? And especially, who would quarrel about as elusive a quality as "spirit?" Yet there are dozens of ways this opening declaration can be supported. This essay will outline a few of them.

It must be acknowledged that all old cities on every continent, young America included, display a remarkable continuity, cohesiveness and spirit that modern cities largely lack. Paris, Rome and Vienna, absolutely have the "spirit," whatever the term may mean. Chicago as a youthful city certainly does, as does Center City Philadelphia and elderly Boston. New York, in spite of vast slashes of modernity, retains a marvelous sense of identity and spirit.

Okay. What is spirit? Clearly there are several distinct but related meanings of the word. One central meaning is "vitality." That term describes a living organism, and it is not much of a stretch to see, to feel, to empathize with some buildings (and cities) as vital organic creations to which we relate as kin. We "get their vibes," so to speak. We are comfortable there because they relate to us, and vice versa, somehow on an inner level, not just objectively. We see a modern building in an ancient context like Rome or Verona, and we recoil – sometimes with delight though often with horror – because it doesn't fit in. The effect of the intrusion is startling and not at all that feeling of sweet satisfaction we experience when we see that "everything is in its place."

There is a glorious little city in Peru, very ancient and altogether contemporary, that exudes a sense of "the way things are supposed to be." That city is Cuzco. It is of Incan origin, high in the Andes, and close to some of the holiest sites in South America. But however remote, it is an urbane thriving community where folks are happily plugged into the global economy, internet, etc., and yet still participating in an age-old tradition that imbues the town with "spirit." Additionally, it is very interesting that the sense of "spirit" is immediately apparent to the visitor from somewhere else altogether.

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Another meaning of the word "spirit" is the Genius Loci, and the "spirit of the place" is very conspicuous in certain remote spiritual sites like Stonehenge, Easter Island, Orkney, etc., as well as hot urban centers like Chicago, New Orleans and Madrid.

Let us now turn to individual buildings to examine the inherent spirit we sometimes sense. For many of us (maybe most of us) modern architecture often seems chilly and dull, and ever so repetitious. How droll that early Modernists would complain of dreary repetition within traditionalist architecture, when no era in architectural history has ever produced so many totally repetitious and unimaginative buildings as our modern times since 1945.

Yikes! What have we wrought? Has there ever been an architectural era so dreary, so dull, so totally lacking in spirit as the last half century since the end of World War II? Wildly inventive buildings have appeared here and there, paid for by totally confused boards of directors, but do they live and breathe? Have we advanced? Where is the spirit? Thrashing around doesn't count!

What does count is something that has endured for thousands of years. It is not easy to define but it involves fundamental relationships, and a sense of identification with our ambience, our friends and fellows and our forebears. Increasingly, we are alienated today, and we must reconnect. This is vitally related to the Classical traditions of our vast cultural heritage. Let us not ignore it any longer. Let us instead renounce the Modernist rejection of all things glorious in our past, and strongly reinstate those universal principals we derive from ancient Greece and Rome, while never forgetting the wisdom of the East we have come to understand.

Yet another sense of the word spirit may be seen in the expression "the letter of the law versus the spirit." In this context the spirit refers to the intention and the fuller meaning of the law rather than a technical definition of the words. Here "spirit" is equivalent to "inner sense," or "fuller meaning." In architecture terms, I find that traditional buildings are fraught with "meaning" whereas Modernist buildings are largely abstract, very literal, and we look for "meaning" in vain. This is a very complex argument that can be addressed in a multitude of ways. Here are a few.

In the first place, any traditional building of any style immediately suggests a broad variety of associations with history, with memories and stories, etc. Modernist buildings are seldom evocative at all. Nor are they meant to be. Generally they differentiate themselves from the past (and even from other buildings) and seek to suggest somewhere we have not yet been. Memory, associations and a sense of relationship have been conscientiously expunged. Easy meaning is unavailable. If it is true that we all seek "meaning" in life, it is no wonder that Modernist buildings do little to delight.

Another way in which old buildings possess meaning (and therefore have spirit) is through an obvious display of the purpose of their parts. We might say, "Here is where we enter (and we are welcome), there is where the light comes in (how sunny the rooms must be!), and there are the several floor levels (how spacious it seems to be inside!). That is the massive lower level that holds the main floor high and dry, and there is the lofty eave line that shades the upper rooms." Old buildings tell their stories while new ones often mask their use. "Form followed function" far more clearly in the past than since it became a modern cliché.

And yet another way in which a building seems to be alive is through a hierarchy of elements, relating each to all as an organic unity. This important characteristic is most readily identified in exalted examples like the Greek Temple, the Gothic Cathedral, the Renaissance Palazzo, or the Georgian Manor House. But all good buildings, from cottage to castle, from library to barn, will display that sense of a total organism. And perceiving that quality we relate to that building, not through an intellectual analysis, but directly as creature to creature.

No discussion of spirit in architecture is complete without mention of "sacred geometry." The subject is ancient, vast, and growing today at an exponential rate. A notable example of the magic of proportional relationships is the peculiar sweetness of certain rooms in the villas of Andrea Palladio. The plain, almost barren, simplicity of some of these rooms rules out all other factors but the geometry itself to account for that particular quality we sense. These rooms have spirit that is almost palpable. We know how he worked this out because he told us so. This brief note will have to suffice for this vast topic.

One sense of spirit I have not addressed is the special case of a spiritual space. The design of places for worship is an exciting activity and one that is very close to my heart. It is also a subject of great contention ranging over the broadest spectrum of entrenched opinion. Modernism has only exacerbated a problem that has existed for a very long time. The careful reader will not be surprised to hear that my ideas on the subject tend to be conservative – that is, "traditional," whatever the particular religious tradition might be. All I have said about buildings in general in the earlier parts of this essay is applicable here and perhaps of more critical importance than elsewhere. My final word on this subject is, "Architect, listen carefully to your Rabbi, Pastor, Priest, or Guru." And honor the liturgy as best you can. Then the spirit will take care of itself. TB

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*Al Holm is the principal of Alvin Holm A.I.A. Architects, Philadelphia, PA. His new book,* The New American Vignola: A Textbook for Drawing the Orders, *will be published in 2010. In 2006 Holm was the first architect to receive the Newington-Cropsey Cultural Studies Center Award for Excellence in the Arts. He received a 2008 Arthur Ross Award from the Institute of Classical Architecture & Classical America (ICA&CA) for excellence in the Classical tradition and he was also the inaugural winner of the 2009 Clem Labine Award for contributions to humane values in the built environment. (See* Traditional Building, *August 2009, page 13). He can be reached at info@alvinholm.com or 215-963-0747.*

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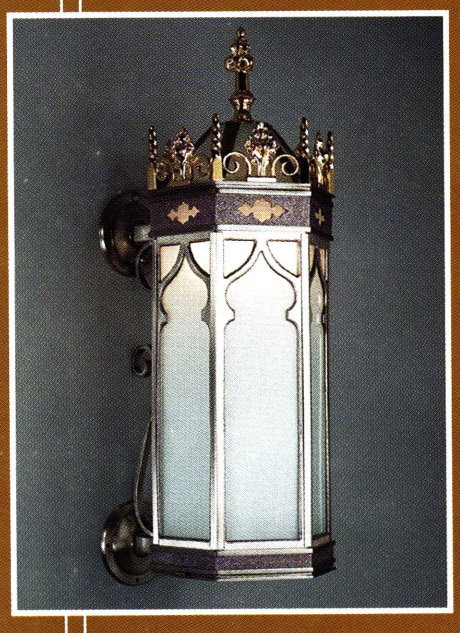

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